City of SACRAMENTO
Community Development

300 Richards Blvd., 3rd Floor
Sacramento, CA 95811

Help Line: 916-264-5011
CityofSacramento.org/dsd

MITIGATED NEGATIVE DECLARATION

The City of Sacramento, California, a municipal corporation, does hereby prepare, declare, and publish this Mitigated Negative Declaration for the following described project:

Robla Estates Project (P21-009): The 20.40-acre project site is located at 5330 Rio Linda Boulevard in the City of Sacramento, California. The project site, identified by Assessor's Parcel Numbers (APNs) 226-0062-004, -008, -009, and -011, is located within the Robla neighborhood of the North Sacramento Community Plan Area, and is currently undeveloped. The City of Sacramento General Plan designates the project site as Suburban Neighborhood Low and Suburban Center (APN 226-0062-009), and the site is zoned Agricultural (A).

The proposed project would include development of 177 two-story single-unit residences and one public park, as well as a detention basin in the northwest corner of the project site. The main access point to the site would be provided from Rio Linda Boulevard through a new roundabout intersection to be located in the southern portion of the site, which would connect to the proposed internal roadway. A secondary access point would be provided from Rio Linda Boulevard in the northern portion of the site. The proposed internal roadway network would also include a number of private alleys from the main internal roadway. The proposed project would include a number of improvements to Rio Linda Boulevard along the project site's frontage, including landscaping, widening of the existing bicycle lane, a planter sidewalk, open iron fencing, and a masonry block wall. The proposed project would require approval of an amendment to the General Plan, Rezone, a Tentative Subdivision Map, and Site Plan and Design Review, with deviations for single-unit residential lot depth and area.

The Lead Agency is the City of Sacramento. The City of Sacramento, Community Development Department, has reviewed the proposed project and, on the basis of the whole record before it, has determined that there is no substantial evidence that the project, with mitigation measures as identified in the attached Initial Study, will have a significant effect on the environment. This Mitigated Negative Declaration reflects the lead agency's independent judgment and analysis. An Environmental Impact Report is not required. This Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act (Public Resources Code [PRC] Sections 21000 et seq.), CEQA Guidelines (Title 14, Sections 15000 et seq. of the California Code of Regulations), the Sacramento Local Environmental Regulations (Resolution 91-892), and the Sacramento City Code.

Due to concerns over COVID-19, the City of Sacramento, Community Development Department's Public Counter, at 300 Richards Boulevard, 3rd Floor, Sacramento, CA 95811 is closed until further notice. A copy of this document and all supportive documentation may be reviewed through the City's website at https://www.cityofsacramento.org/Community-Development/Planning/Environmental/Impact-Reports.

Environmental Services Manager, City of Sacramento, California, a municipal corporation

By: Scott Johnson

Date: 08/03/2022

City of SACRAMENTO

ROBLA ESTATES PROJECT
(P21-009)

INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION FOR ANTICIPATED SUBSEQUENT PROJECTS UNDER THE 2035 GENERAL PLAN MASTER EIR

This Initial Study has been prepared by the City of Sacramento, Community Development Department, 300 Richards Boulevard, Third Floor, Sacramento, CA 95811, pursuant to the California Environmental Quality Act (PRC Sections 21000 *et seq.*), CEQA Guidelines (Title 14, Section 15000 *et seq.* of the California Code of Regulations) and the Sacramento Local Environmental Regulations (Resolution 91-892) adopted by the City of Sacramento.

ORGANIZATION OF THE INITIAL STUDY

This Initial Study is organized into the following sections:

SECTION I - BACKGROUND: Provides summary background information about the project name, location, sponsor, and the date this Initial Study was completed.

SECTION II - PROJECT DESCRIPTION: Includes a detailed description of the proposed project.

SECTION III - ENVIRONMENTAL CHECKLIST AND DISCUSSION: Reviews proposed project and states whether the project would have additional significant environmental effects (project-specific effects) that were not evaluated in the Master EIR for the 2035 General Plan.

SECTION IV - ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: Identifies which environmental factors were determined to have additional significant environmental effects.

SECTION V - DETERMINATION: States whether environmental effects associated with development of the proposed project are significant, and what, if any, added environmental documentation may be required.

REFERENCES CITED: Identifies source materials that have been consulted in the preparation of the Initial Study.

APPENDICES: Appends technical information that was referenced as attached in the preparation of the Initial Study.

SECTION I - BACKGROUND

Project Name and File Number:	Robla Estates Project (P21-009)
Project Location:	5330 Rio Linda Boulevard Sacramento, CA 95838 APNs: 226-0062-004, -008, -009, and -011
Project Applicant:	Swift Construction P.O. Box 3038 Granite Bay, CA 95746
Project Planner:	Jose Quintanilla, Associate Planner (916) 808-5879 jquintanilla@cityofsacramento.org
Environmental Planner:	Scott Johnson, Senior Planner (916) 808-5842 SRJohnson@cityofsacramento.org
Date Initial Study Completed:	July 2022

This Initial Study was prepared in accordance with the California Environmental Quality Act (CEQA) (PRC Sections 1500 *et seq*.). The Lead Agency is the City of Sacramento.

The City of Sacramento, Community Development Department, has reviewed the proposed project and, on the basis of the whole record before it, has determined that the proposed project would not result in any significant and unavoidable impacts. The initial study identifies new significant effects as well as mitigation measures that would reduce each such effect to a less-than-significant level. A Mitigated Negative Declaration is the appropriate CEQA document (CEQA Guidelines Section 15378(b)).

As part of the Master EIR process, the City is required to incorporate all feasible mitigation measures or feasible alternatives appropriate to the project as set forth in the Master EIR (CEQA Guidelines Section 15177(d)). Policies included in the 2035 General Plan that reduce significant impacts identified in the Master EIR are identified and discussed. See also the Master EIR for the 2035 General Plan. The mitigation monitoring plan for the 2035 General Plan, which provides references to applicable general plan policies that reduce the environmental effects of development that may occur consistent with the general plan, is included in the adopting resolution for the Master EIR. See City Council Resolution No. 2015-0060, beginning on page 60. The resolution is available at the City's webpage listed below. It should be noted that the proposed project would include a General Plan amendment and would not be consistent with the land use designation identified for the site.

This analysis incorporates by reference the general discussion portions of the 2035 General Plan Master EIR. (CEQA Guidelines Section 15150(a)). The Master EIR and resolution are available for public review at the City of Sacramento's web site at:

http://www.cityofsacramento.org/Community-Development/Planning/Environmental/Impact-Reports.aspx

A copy of this document and all supportive documentation may be reviewed in person by appointment at the City of Sacramento, Community Development Department's Public Counter, at 300 Richards Boulevard, 3rd Floor, Sacramento, CA 95811 and at the Sacramento Public Library's Central branch, located at 828 I St., Sacramento, CA 95814. This document and all supportive documentation may also be downloaded through the City's website listed below.

https://www.cityofsacramento.org/Community-Development/Planning/Environmental/Impact-Reports.aspx

The City will circulate a Notice of Availability/Notice of Intent (NOA/NOI) that confirms the City's intention to adopt the Mitigated Negative Declaration, and provides dates for public comment. The NOA/NOI will be available on the City's website set forth above.

The City is soliciting views of interested persons and agencies on the content of the environmental information presented in this document. Written comments should be sent at the earliest possible date, but no later than the 30-day review period ending August 5, 2022.

Please send written responses to:

Scott Johnson, Senior Planner
Community Development Department
City of Sacramento
300 Richards Boulevard, 3rd Floor
Sacramento, CA 95811
Direct Line: (916) 808-8272
Rbess@cityofsacramento.org

SECTION II - PROJECT DESCRIPTION

INTRODUCTION

The Project Description section of the Initial Study provides a description of the Robla Estates Project (proposed project) location, existing conditions, surrounding land uses, and project components.

PROJECT LOCATION, EXISTING CONDITIONS, AND SURROUNDING LAND USES

The 20.40-acre project site is located north of the intersection of Marysville Boulevard and Claire Avenue, at 5330 Rio Linda Boulevard in the North Sacramento Community Plan area in the City of Sacramento, California (APNs 226-0062-004, -008, -009, and -011) (see Figure 1). The project site is currently undeveloped and consists primarily of disturbed grasslands with a few scattered trees throughout. The City of Sacramento General Plan designates the project site as Suburban Neighborhood Low and Suburban Center, and the site is zoned Agricultural (A). The site is bound by Rio Linda Boulevard to the west, a levee with an associated access road to the north with Robla Creek just beyond, and the Sacramento Northern Bicycle Trail to the east, followed by Rose Street. Surrounding existing land uses include agricultural land to the north across Robla Creek, east of the northern portion of the site, across Rose Street, and west, across Rio Linda Boulevard; single-unit residences to the east and south across Rose Street; two single-unit residences across Rio Linda Boulevard to the west, and one isolated single-unit residence to the east of the northern portion of the project site, beyond Rose Street; and Robla Elementary School to the southeast (see Figure 2). In addition, a planned multi-unit residential development is located immediately south of the project site. Regional access is provided by Interstate 5 (I-5) to the west, and Interstate 80 (I-80) to the south.

PROJECT DESCRIPTION

The proposed project would include development of 177 two-story single-unit residences and two public parks, as well as a detention basin in the northwest corner of the project site (see Figure 3). The main access point to the site would be provided from Rio Linda Boulevard through a new roundabout intersection to be located in the southern portion of the site, which would connect to the proposed internal roadway. A secondary access point would be provided from Rio Linda Boulevard in the northern portion of the site. The proposed internal roadway network would also include a number of private alleys from the main internal roadway. The proposed project would include a number of improvements to Rio Linda Boulevard along the project site's frontage, including landscaping, widening of the existing bicycle lane, a planter sidewalk, open iron fencing, and a masonry block wall. The proposed project would require approval of an amendment to the General Plan, Rezone, a Tentative Subdivision Map, and Site Plan and Design Review, with deviations to single-unit residential lot depth and area.

A discussion of the project components, including the residential units, site access, parking and circulation, grading and construction, utility infrastructure, parks, open space, landscaping, and project entitlements, is included below.

Residential Units

The proposed project would include development of 177 two-story single-unit residences. The units would range in size from 1,021 square feet (sf) to 1,342 sf. Other than minor variations in layout, the residential units would generally consist of the same three-bedroom/three-bathroom design. All residences would include two-car garages on the first floor of the unit. In addition, a minimum setback of 50 feet from the levee would be required for all residential units. A six-foot open iron fence would be constructed along the northern and eastern borders of the project site.

Although the proposed project would meet the density requirements for a R-2A zone, the proposed lot depth and lot area would require two deviations. The proposed development would meet the lot width requirements, but the proposed minimum lot depth would be 65 feet, rather than the 80 feet minimum established in Section 17.208.130 of the Sacramento City Code.

Figure 1
Regional Project Location

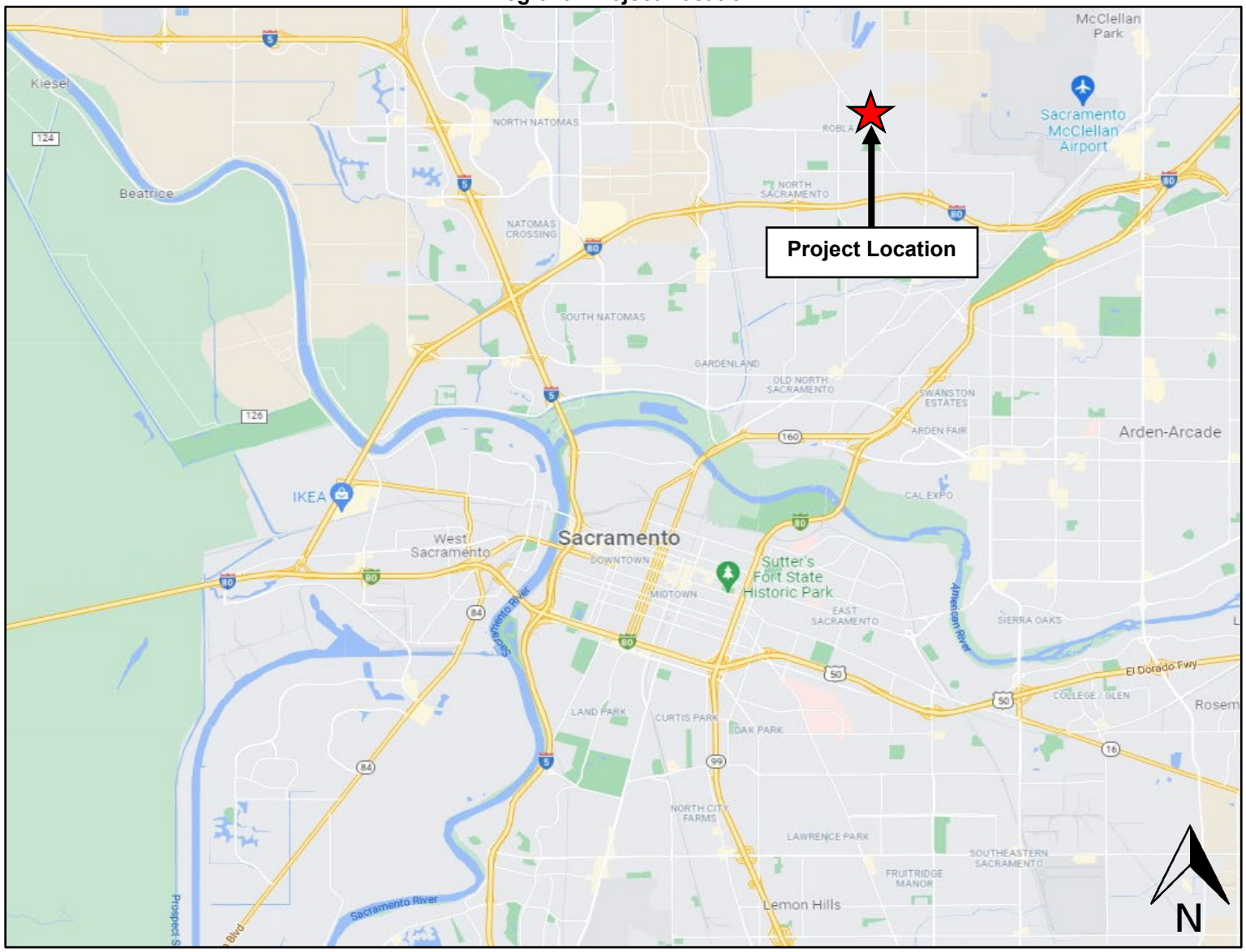
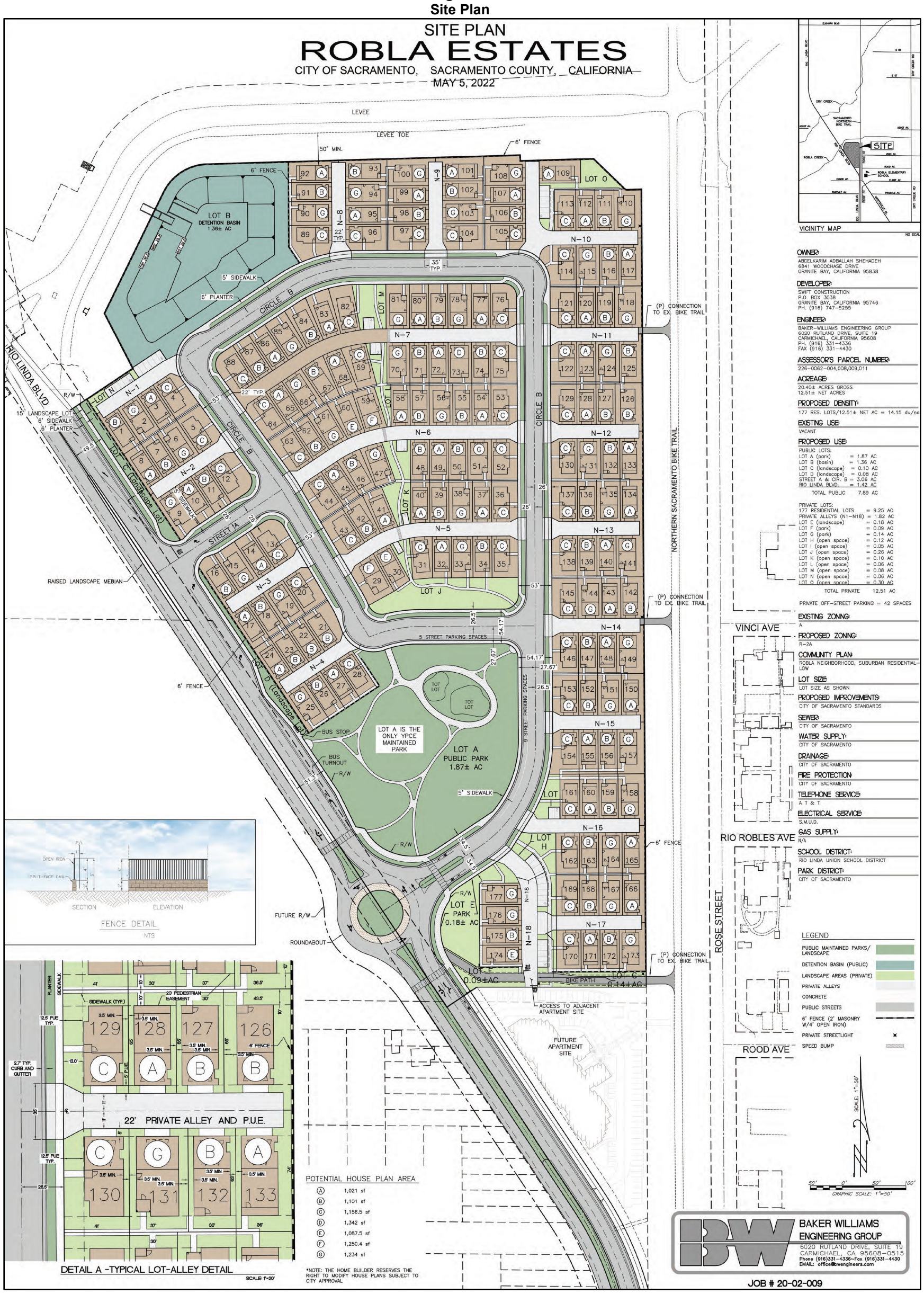


Figure 2
Project Vicinity Map

Figure 3
Site Plan



Site Access, Parking, and Circulation

Primary access to the project site would be provided from Rio Linda Boulevard through a new roadway connection to a new roundabout. The main access road would include a 69-foot right-of-way comprised of a 12-foot median island in the center, bounded first by 11-foot travel lanes, then four-foot bike lanes, followed by a vertical curb and gutter, a five-foot-eight-inch planter, and, finally, a five-foot concrete sidewalk (see Section B1 in Figure 5). The main access road would then taper to a 54.2-foot right-of-way comprised of two 13-foot travel lanes. On the western side of the roadway, a seven-foot street parking area would be adjacent to the travel lane, followed by a gutter, and, finally, a five-foot concrete sidewalk. The eastern side of the roadway would be comprised of a gutter adjacent to the travel lane, followed by a 5.8-foot planter area, and a five-foot concrete sidewalk. The main access road would then connect to an internal circular roadway, identified as Circle B in Figure 4, providing access to the private alleys and proposed residences (see Figure 4).

Secondary access to the project site would be provided through a new roadway from Rio Linda Boulevard located north of the primary access point, which is identified as Street A in Figure 4. Street A would allow right-in and right-out movements only and would include a 53-foot right-of-way, comprised of two 13-foot travel lanes bounded on the outside first by two-foot gutters, then a five-foot-eight-inch planter area, and finally five-foot-wide concrete sidewalks (see Figure 5). Street A would connect to Circle B, providing access to the private alleys and proposed residences.

Circle B, which is labeled as Street B3 in Figure 5, would circle the center portion of the project site, and would include a 53-foot right-of-way that is comprised of two 13-foot travel lanes bordered by a gutter, then a five-foot, eight-inch planter area, and a five-foot concrete sidewalk. Branching off of the internal roadway network throughout the site would be alleyways that would lead to individual residential units and the associated parking garages. The alleys would be comprised of a 22-foot driveway bordered on either side by a five-foot public utility easement.

The proposed project would include a number of off-site improvements to Rio Linda Boulevard along the project frontage, primarily the addition of a new roundabout at the project's main access point. In addition, the proposed project would include widening of the roadway from a 60-foot right-of-way with two travel lanes, to a 60-foot right-of-way, comprised of a 23-foot travel lane, two-foot buffer, six-foot bike lane, 6.5-foot planter area, and six-foot concrete sidewalk along the project frontage, as well as a 12-foot median in the center, a 12-foot travel lane, and a six-foot shoulder on the western side of the street, as generally shown under the interim conditions in Figure 5. Improvements of the project site's frontage along Rio Linda Boulevard would include a 15-foot landscaped area, as well as a six-foot open iron fence with masonry. The ultimate section of Rio Linda Boulevard, which is not part of the proposed project, is also shown in Figure 5.

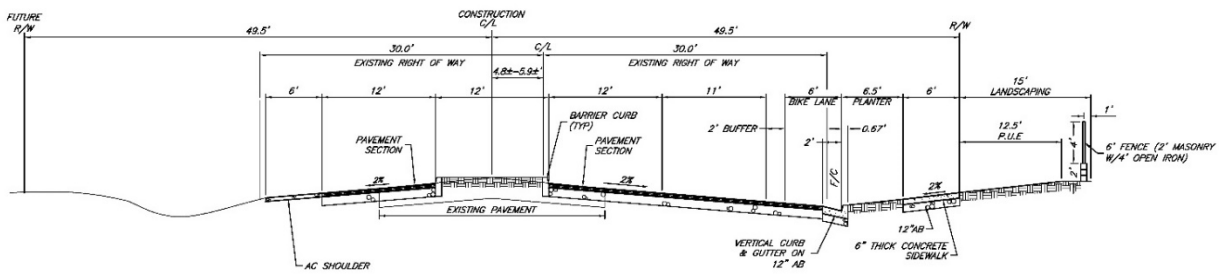
As noted above, each of the 177 single-unit units would include a two-car garage, which would result in a total of 354 parking spots available on-site for residents. The proposed project would also include 42 off-street parking spaces, which would be located along the internal roadway network. Section 17.502.190 of the Sacramento City Code establishes the dimensions of standard street sections. The project would require approval of a deviation to allow street parking along the park frontage.

A pedestrian crosswalk would be located in the proximity of where the main access roadway would merge with Rio Linda Boulevard. In addition, the proposed project would include walking paths going from north to south between the residential units located in the center of the project site, as well as paths throughout the park (see Figure 4). The project would also include three paths located on the eastern border of the project site that would connect to the Sacramento Northern Bike Trail. The first two paths would be located in the northern and central portions of the project site, and would branch from the alleyways located between residential units. A third path would be located in the southernmost corner of the project site, and would branch from a bike path that would run along the southern border of the project site.

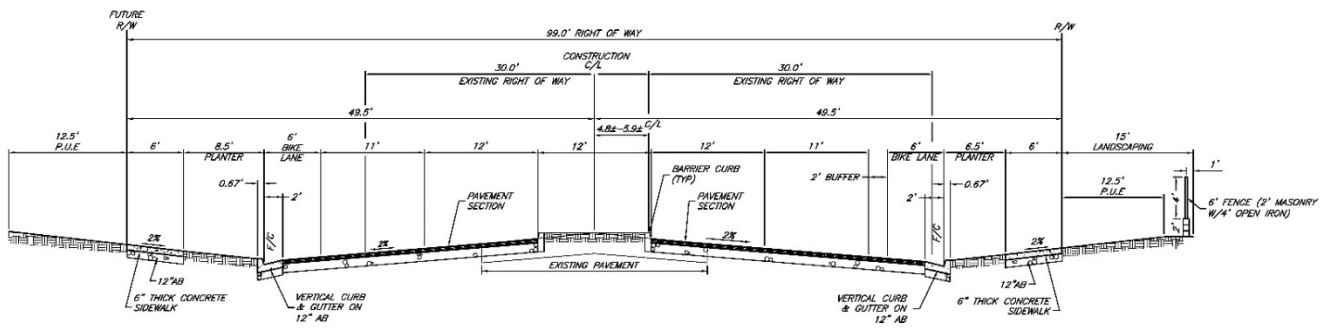
Figure 4
Tentative Subdivision Map

Figure 5
Rio Linda Boulevard Improvements

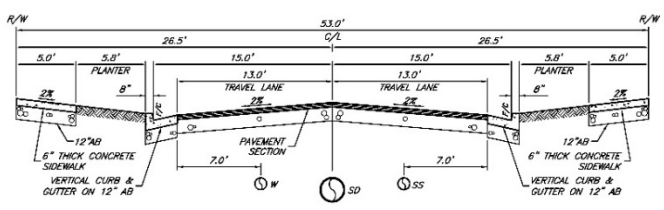
TENTATIVE SUBDIVISION MAP
ROBLA ESTATES
CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA
MARCH, 2022
SHEET 2 of 2



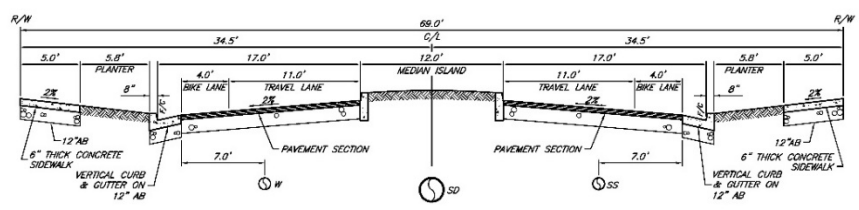
SECTION RIO LINDA BOULEVARD (INTERIM)
NO SCALE



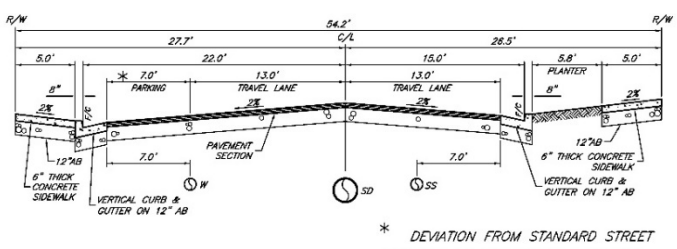
SECTION RIO LINDA BOULEVARD (ULTIMATE)
NO SCALE



SECTION STREET A
NO SCALE

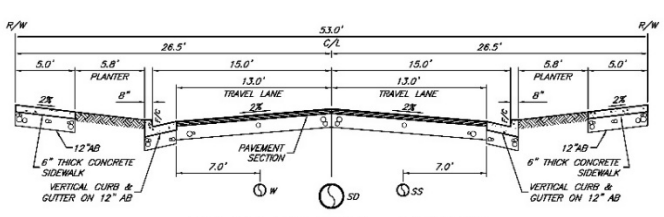


SECTION STREET B1 AT INTERSECTION TO RIO LINDA BLVD.
NO SCALE

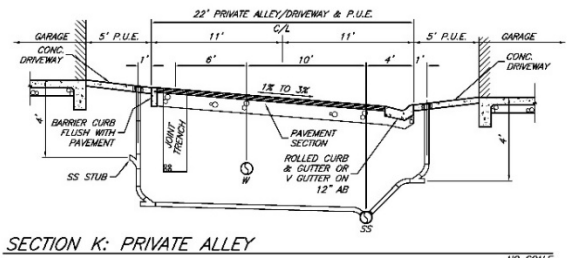


* DEVIATION FROM STANDARD STREET SECTIONS TO ALLOW STREET PARKING.

SECTION STREET B2 AT PARK
NO SCALE



SECTION STREET B3– STANDARD
NO SCALE



SECTION K: PRIVATE ALLEY
NO SCALE

TREES PROPOSED TO BE REMOVED

FIELD TAG #	CITY TREE #	PROT-ECTED BY CODE	OFFSITE	SPECIES COMMON NAME	SPECIES BOTANICAL NAME	DBH	MEAS-URED AT	CANOPY RADIUS	ARBORIST RATING	DEVELOP-MENT STATUS	NOTES
7329		No	No	Tree of heaven	Ailanthus altissima	15	54	20	3 Fair - Minor Problems	Proposed for Removal	Bowl height 3 feet three spars with inclusions lower bark is flaking off root flare is buried
7330		No	No	Tree of Heaven	Ailanthus altissima	6	54	12	3 Fair - Minor Problems	Proposed for Removal	Bowl height 18 inches three main spars bark peeling off construction damage likely disking bark peeling off
7331		No	No	Tree of heaven	Ailanthus altissima	7.5	54	15	3 Fair - Minor Problems	Proposed for Removal	Bowl height 6 inches three main spars bark peeling off at base
7332		Private Protected	No	Black Willow	Salix nigra	25	54	27	3 Fair - Minor Problems	Proposed for Removal	Multi-stem Lots of dead branches canopy is sparse flood area
7339		No	No	Almond	Prunus dulcis	5	54	5	0 Dead	Proposed for Removal	Totally dead
7340		No	Yes	Almond	Prunus dulcis	4	54	5	1 Extreme Structure or Health Problems	Proposed for Removal	Half dead. Previously tree fell over and then sprouted back
7341		No	No	Green Ash	Fraxinus pennsy	9	54	10	1 Extreme Structure or Health Problems	Proposed for Removal	At base tree was 25 inches old decayed spar, trunk is completely rotten decay all the way through trunk 9 inch spar above decay
7342	13502	Street	No	Valley Oak	Quercus lobata	16	54	15	2 Major Structure or Health Problems	Proposed for Removal	Tree is under distribution lines and was topped. Now grows over the road
7343		No	No	Blue Oak	Quercus douglasii	8	54	9	4 Good - No Apparent Problems	Proposed for Removal	Small trunk wound
7344		No	No	Blue Oak	Quercus douglasii	5	54	10	4 Good - No Apparent Problems	Proposed for Removal	No apparent problems but it's 3 feet off the road and under powerlines
1	13501	Street	No	Chinese Evergreen Elm	Ulmus	3	54	10	2 Major Structure or Health Problems	Proposed for Removal	See photo. Vigorous sprout
2	13503	Street	No	Tree of Heaven	Ailanthus altissima	0-3	54	10	2 Major Structure or Health Problems	Proposed for Removal	A bunch of 1-2' sprouts along the roadside but nothing at the location shown on the city inventory. See photos.
3	13504	Street	No	Tree of Heaven	Ailanthus altissima	0-3	54	10	2 Major Structure or Health Problems	Proposed for Removal	A bunch of 1-2' sprouts along the roadside. See photos.
391	13485	Street	Yes	Green Ash	Fraxinus pennsylvanica	19, 9	54	18	1 Extreme Structure or Health Problems	Proposed for Removal	Severe basal decay. Larger stem forks at 4 feet. Severe trunk cavities with decay. Stems are from a fairy ring.
392		No	Yes	Green Ash	Fraxinus pennsylvanica	17	36	0	0 Dead	Proposed for Removal	Standing Dead.
393	13486	Street	Yes	Green Ash	Fraxinus pennsylvanica	9	36	10	1 Extreme Structure or Health Problems	Proposed for Removal	2 stems from base, western stem dead. Trunk is growing against dead tree to south. Significant dieback. Vigor poor.
2502	13472	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	15	48	15	1 Extreme Structure or Health Problems	Proposed for Removal	Fire Damage. Severe Trunk Cavities with decay. Severe tip dieback. Codominant at 36 inches with decay and inclusions.
2503	13473	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	19.5	54	15	2 Major Structure or Health Problems	Proposed for Removal	Trunk cavities. Failure wounds with decay. Tip dieback. Vigor poor.
2504	13483	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	28,8,8,5	54	15	1 Extreme Structure or Health Problems	Proposed for Removal	Main large trunk dead. Only 3 root sprouts are alive, leaning severely.
2505	13484	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	6,6,5	54	15	1 Extreme Structure or Health Problems	Proposed for Removal	Severe trunk cavity, severe decay.
2506		No	Yes	Black Walnut	Juglans sp.	7	54	20	2 Major Structure or Health Problems	Proposed for	Suppressed, severe lean. Severe tip dieback.
2507	13487	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	20	54	15	1 Extreme Structure or Health Problems	Proposed for Removal	Severe trunk cavity, severe decay. Fire Damage. 30% foliage remaining.
2509		Private Protected	Yes	Valley Oak	Quercus lobata	15	54	20	2 Major Structure or Health Problems	Proposed for Removal	Fire Damage to trunk and lower half of foliage. Vigor poor. Suppressed, severe lean north.
2510	13488	**Street**	Yes	Valley Oak	Quercus lobata	16,12,10	54	20	3 Fair - Minor Problems	Proposed for Removal	Forks at base, 3 stems. Moderate chlorosis.
2513	13489	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	9	54	15	1 Extreme Structure or Health Problems	Proposed for Removal	Suppressed, severe lean. Trunk cavity, sun scald. Severe die back.
2515	13490	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	15	54	18	2 Major Structure or Health Problems	Proposed for Removal	Trunk cavities. Dead top.
2526	13497	**Street**	Yes	Green Ash	Fraxinus pennsylvanica	19	54	20	1 Extreme Structure or Health Problems	Proposed for Removal	99 percent dead, only foliage is trunk sprouts on lower trunk.

BAKER WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336-Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009

Grading and Construction

Construction of the proposed project is anticipated to begin in fall 2022 and continue over a span of approximately three years. As shown in Figure 6 and Figure 7, soil import and export would not be required, as the project site is anticipated to balance.

Utility Infrastructure

The following discussion relates to the water, wastewater, and stormwater drainage infrastructure components of the proposed project (see Figure 8).

Water

Municipal water is currently supplied provided to the surrounding existing uses by the City of Sacramento Department of Utilities. The City uses surface water from the American and Sacramento rivers, as well as groundwater north of the American River to meet the City's demands. The City would supply water to the proposed project. The project would connect to an existing water main located just south of the project site. A new 12-inch water main would branch from the existing water main and run underneath Rio Linda Boulevard, which would then distribute water throughout the project site through a network of eight- to 12-inch water lines beneath the internal roadways.

Wastewater

Wastewater treatment for the project area is currently provided by the City of Sacramento Department of Utilities and the Sacramento Regional County Sanitation District (SRCSD). Wastewater generated in the project area is collected in the City's separated sewer system through a series of sewer pipes and flows into the SRCSD interceptor system, where the wastewater is conveyed to the Sacramento Regional Wastewater Treatment Plant (SRWWTP). The SRWWTP is owned and operated by the SRCSD and provides sewage treatment for the entire City. Each building with a wastewater source on each lot would be required to have a separate connection to the sewer system.

The proposed project would add a ten-inch sewer line in Rio Linda Boulevard that would connect to an existing manhole at the intersection of Claire Avenue and Marysville Boulevard, to the south of the project site. Wastewater would then be transported through a ten-inch sewer line to an existing 48-inch sewer line located south of Rose Street. The on-site sewer system would connect to the proposed sewer line in Rio Linda Boulevard through a network of eight-inch sewer lines.

Stormwater Drainage

The City's Department of Utilities provides storm drainage service throughout the City by using drain inlets, pumps, and canals. The City provides stormwater drainage with either the City's Combined Sewer System (CSS) or into individual drainage sumps located throughout the City. Stormwater collected by the CCS is transported to the SRCSD's SRWWTP, where runoff is then treated prior to discharge into the Sacramento River.

Stormwater from impervious areas within the project site would be collected by a series of roof and street gutters into new drop inlets, which would connect to a network of stormwater lines. The stormwater would be conveyed to a detention basin in the northwest corner of the site. The stormwater would then be pumped by a new pump station to the existing 48-inch culvert under the levee to Robla Creek. In addition, high flow weirs are proposed at the Northern Channel and the East Channel, which would help to prevent off-site flows from entering the proposed detention basin. The proposed detention basin and pump station would be sized to accommodate all stormwater from the project site. A 12-inch detention basin overflow pipe would convey overflow from the detention basin through the levee and would discharge to a new outfall at the tow of the levee into rock energy dissipaters. Water sheetflows from the outfall location towards Robla Creek.

Figure 6
Preliminary Grading Plan (North)

Figure 7
Preliminary Grading Plan (South)

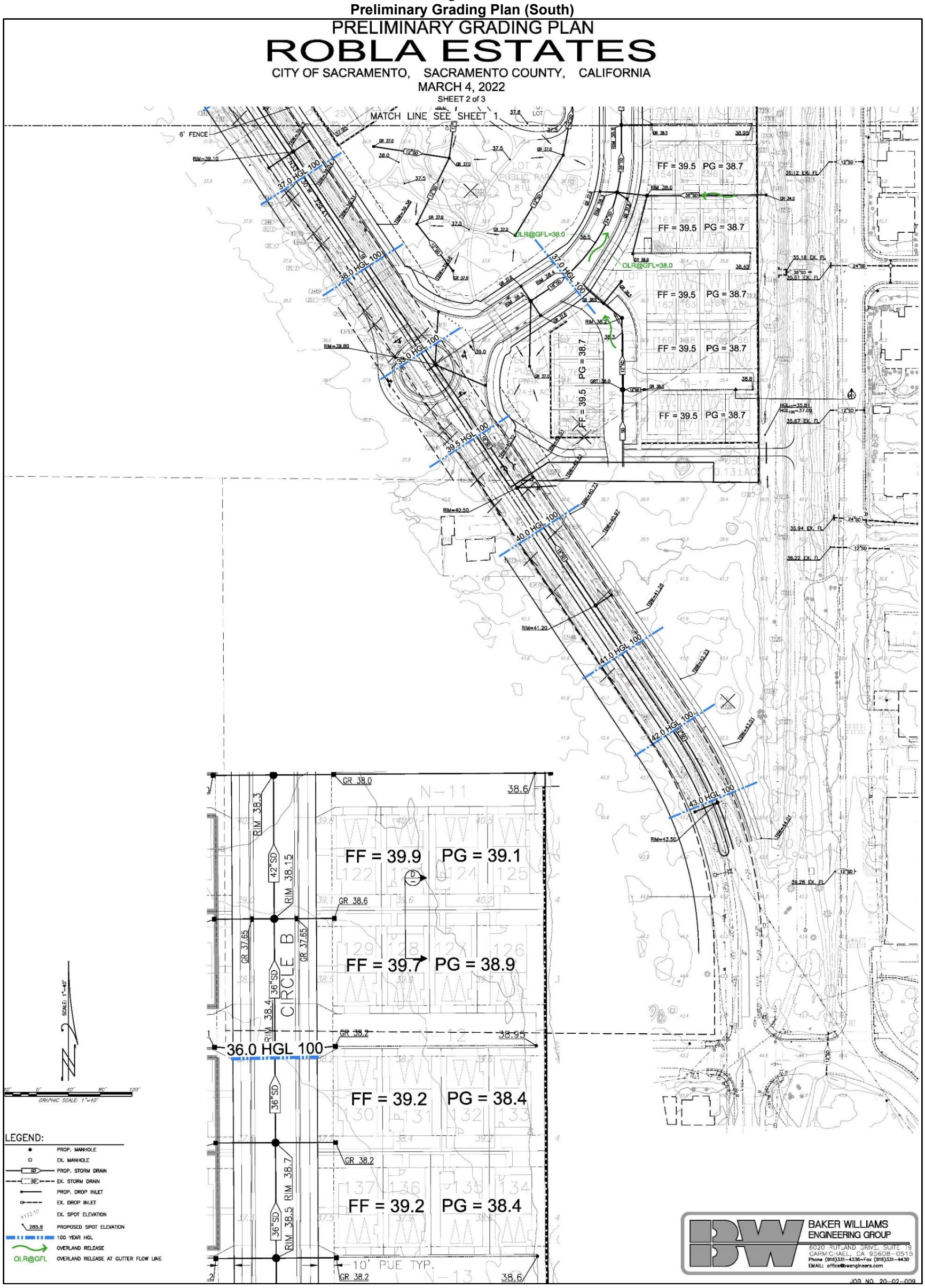
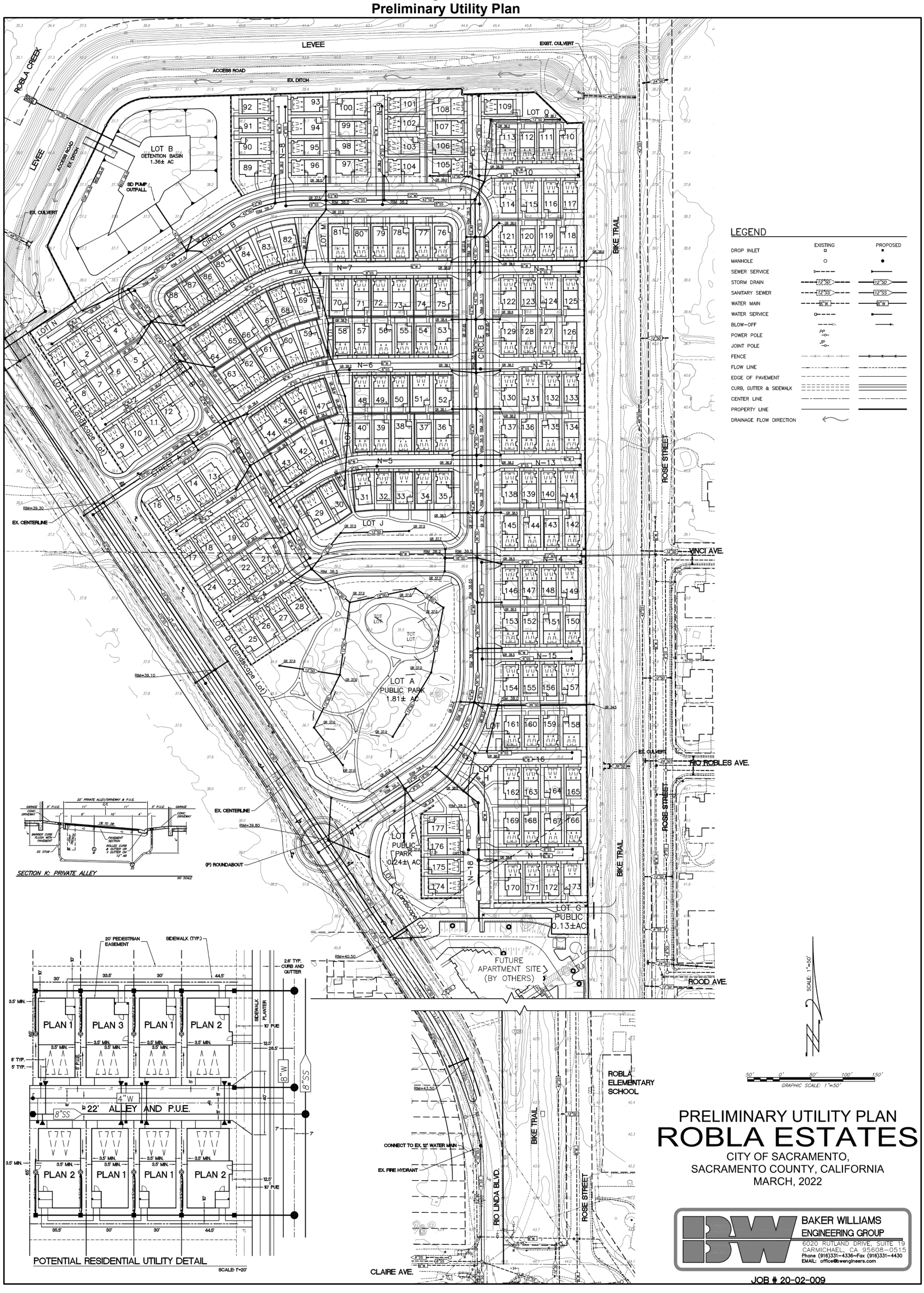


Figure 8
Preliminary Utility Plan



Project Entitlements

The proposed project would require approval of the following entitlements:

- Approval of the Initial Study/Mitigated Negative Declaration (IS/MND) and Mitigation and Monitoring Plan;
- General Plan Amendment from Suburban Neighborhood Low and Suburban Center to Suburban Neighborhood Medium;
- Rezone from Agriculture (A) to Multi-Unit Dwelling (R-2A);
- Tentative Subdivision Map to subdivide the site into 177 lots for single-unit residences, public lots for parks, a detention basin, landscaping, and public roadway improvements, and private lots for private alleys and open space areas; and
- Site Plan and Design Review, with deviations for single-unit residential lot depth and area.

Attachments

Appendix A – CalEE Mod Modeling Results
Appendix B – Arborist Report
Appendix C – Biological Resources Assessment
Appendix D – Wetland Delineation
Appendix E – Geotechnical Exploration
Appendix F – Phase I Environmental Assessment
Appendix G – Sewer Study
Appendix H – Water Study
Appendix I – Preliminary Basin Sizing Memorandum
Appendix J – Environmental Noise Assessment
Appendix K – VMT Analysis

SECTION III – ENVIRONMENTAL CHECKLIST AND DISCUSSION

LAND USE, POPULATION AND HOUSING, AGRICULTURAL RESOURCES

Introduction

The California Environmental Quality Act (CEQA) requires the Lead Agency to examine the effects of a project on the physical conditions that exist within the area that would be affected by the project. CEQA also requires a discussion of any inconsistency between the proposed project and applicable general plans and regional plans.

An inconsistency between the proposed project and an adopted plan for land use development in a community would not constitute a physical change in the environment. When a project diverges from an adopted plan, however, it may affect planning in the community regarding infrastructure and services, and the new demands generated by the project may result in later physical changes in response to the project.

In the same manner, the fact that a project brings new people or demand for housing to a community does not, by itself, change the physical conditions. An increase in population may, however, generate changes in retail demand or demand for governmental services, and the demand for housing may generate new activity in residential development. Physical environmental impacts that could result from implementing the proposed project are discussed in the appropriate technical sections.

This section of the IS/MND identifies the applicable land use designations, plans and policies, and permissible densities and intensities of use, and discusses any inconsistencies between the foregoing plans and the proposed project. This section also discusses agricultural resources and wildfire, and the effect of the project on these resources.

Discussion

<u>Land Use</u>

The City of Sacramento General Plan designates the project site as Suburban Neighborhood Low Density and Suburban Center, and the site is zoned Agriculture (A). Following the approval of a General Plan Amendment, the site would be designated as Suburban Neighborhood Medium Density. In addition, the proposed project would require approval of a Rezone to change the site's zoning from A to Multi-Unit Dwelling (R-2A). Although the proposed project would require a General Plan Amendment and Rezone, it is important to note that the site was previously planned for residential development in both the General Plan and Community Plan. Thus, the proposed use is generally consistent with both the General Plan and the Community Plan. The Suburban Neighborhood Medium Density land use designation provides for medium-density housing and neighborhood-support uses, including small-lot single-unit detached dwellings; small-lot single-unit attached dwellings; accessory second units; multi-unit dwellings; limited neighborhood-serving commercial on lots three acres or less; and compatible public, quasi-public, and special uses. The land use designation allows for a density range of seven to 17 dwelling units per net acre (du/ac).

Section 17.208.130 of the City of Sacramento Municipal Code includes development standards for projects with a R-2A zoning designation. Section 17.208.130 requires a lot depth of 80 feet. The minimum lot depth proposed for the project would be 65 feet. Section 17.208.130 also requires a lot area of 2,500 sf. The minimum lot area proposed as part of the project would be 1,950 sf. As such, the proposed project would require a deviation for the lot depth and lot area proposed. Lot coverage requirements are designed to ensure that lots are not overdeveloped; however, such requirements have been found to impede home construction on small lots. Therefore, deviations are often necessary. For example, the following trends in the local and national housing markets would support the need for the proposed deviations:

- An increase in smaller lots and compact development reflecting both increasing land cost and 'smart growth' planning trends;

- Increases in home sizes;
- Demand for increased interior entertainment space; and
- Demand for smaller, drought-sensitive yards.

The proposed project would consist of 177 units over 12.51 net acres, resulting in a density of 14.15 du/ac, which would be within the allowed density range set forth by the Suburban Neighborhood Medium Density designation and the R-2A zoning district. Approval of the General Plan Amendment, Rezone, and Site Plan and Design Review, with deviations, are discretionary actions subject to approval by City Council. Should the City approve the requested entitlements, the project would be rendered consistent with the City's General Plan and Zoning Ordinance. From a policy perspective, the proposed project would be subject to the applicable goals and policies within the General Plan and Community Plan. As discussed throughout this IS/MND, the proposed project would be generally consistent with the policies in the General Plan and Community Plan adopted for the purpose of avoiding or mitigating an environmental effect.

While the project would introduce a slightly more intensive use when compared to what was planned for the site pursuant to the General Plan, the project proposed is compatible with the uses and intensity of the surrounding existing and planned development. For example, existing single-unit residential subdivisions are located to the south and east of the site, and individual single-unit residences are also located to the west and east of the site. The existing development in the area are currently served by existing utilities and infrastructure. Therefore, the project would introduce a similar land use to these existing residential developments in the project vicinity and would not require extensive extensions of utilities and infrastructure in order to serve the site. In addition, the area to the west of Rio Linda Boulevard is designated Suburban Neighborhood High Density (SNHD) and, thus, anticipated for residential development. A multi-unit residential development is also planned immediately south of the project site. Therefore, the proposed project would not introduce an incompatible use to the project area or create land use conflicts and would not result in any adverse environmental effects associated with such. In addition, given that the land is undeveloped, implementation of the project would not physically divide an established community.

The project site is located approximately 3,400 feet south of the Rio Linda Airport. The Sacramento Area Council of Governments (SACOG) has reviewed the project plans and confirmed that the project is allowed within both the McClellan Comprehensive Land Use Plan and the Rio Linda Comprehensive Land Use Plan.[1]

Based on the above, the proposed project would not result in impacts related to land use.

Population and Housing

The project site is currently undeveloped. Thus, implementation of the proposed project would not displace any existing housing units or people. The proposed project would include the construction of 177 two-story single-unit residences within the North Sacramento Community Plan. The project site currently contains 12.22 net acres designated Suburban Neighborhood Low and 0.29-net acre designated Suburban Center and is planned for residential development. Following the General Plan Amendment and Rezone, the project site would be designated Suburban Neighborhood Medium, and would therefore increase population from what was anticipated under the General Plan and Master EIR. The maximum density allowed under the Suburban Neighborhood Low designation is eight dwelling units per acre (du/a), and the maximum density allowed under Suburban Center is 36 du/a. Given the average persons per household in the City of Sacramento is 2.63,[2] buildout of the project site under the existing land use designations would result in an increase of approximately 285 residents.[3] Buildout of the proposed project would result in a

[1] Chew, Greg, Senior Planner, Sacramento Area Council of Governments. Personal Communication [email] with Quintanilla, Jose, Associate Planner, City of Sacramento. July 8, 2021.

[2] United States Census Bureau. *QuickFacts: Sacramento city, California*. Available at: https://www.census.gov/quickfacts/sacramentocitycalifornia. Accessed March 2022.

[3] Residents estimated under the existing land use designations of the project site were calculated using the following formula: (12.22 net acres x 8 du/a) + (0.29 acres x 36 du/a) = 108.2 dwelling units x 2.63 persons per household = 284.57 residents.

population increase of approximately 466 new residents,[4] which would result in an increase of 181 persons from what could currently occur on the site associated with the existing land use designations. It should be noted that if the site were to be built out at the maximum density allowed under the new Suburban Neighborhood Medium designation, development of the project site could result in a population increase of approximately 559 new residents.[5] Such an increase in population would generally be within the projections for buildout of the North Sacramento area considered in the General Plan and would not be considered substantial unplanned population growth beyond what was previously analyzed in the Master EIR. In addition, as presented throughout this IS/MND, adequate capacity of utilities and public services exist to meet the proposed project's needs, and construction of new utilities or expansion of existing facilities would not result in any significant environmental impacts.

The 2035 General Plan includes assumptions for the amount of growth that will occur within the General Plan area, and assumes the City will grow to about 640,400 residents by 2035, which is an increase of approximately 165,000 residents when compared to the estimated population of 475,500 in 2012. Population projections were derived from SACOG's Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) forecast, provided by SACOG in February 2013.

SACOG determines growth projections by evaluating baseline data (existing housing units and employees, jobs/housing ratio, and percent of regional growth share for housing units and employees), historic reference data (based upon five- and ten-year residential building permit averages and historic county-level employment statistics), capacity data (General Plan data), and current MTIP data about assumptions used in the most recent MTP/SCS.

Development of 177 housing units, and the associated addition of approximately 181 residents would increase the total current population of the City of Sacramento from 525,041[6] to approximately 525,222. However, as discussed above, the City's population is anticipated to grow to as much as 640,400 residents by buildout. Therefore, although the proposed project would have the potential to increase the population of the area, such an increase in population would still be within the range of growth projections assumed in the Master EIR. As such, impacts associated with the growth anticipated in the General Plan area were analyzed in the Master EIR.

Based on the above, the proposed project would not result in impacts related to population and housing.

Agricultural Resources

The Master EIR discussed the potential impact of development under the 2035 General Plan on agricultural resources (see Master EIR, Chapter 4.1). In addition to evaluating the effect of the General Plan on sites within the City, the Master EIR noted that to the extent the Sacramento General Plan accommodates future growth within the City limits, the conversion of farmland outside the City limits is minimized (Master EIR, page 4.1-3). The Master EIR concluded that the impact of the General Plan on agricultural resources within the City would be less than significant.

While the project site is currently undeveloped and zoned as A, according to the California Department of Conservation Important Farmland Finder, the project site is designated as Other Land.[7] As such, the project site does not contain Prime Farmland, Unique Farmland, or Farmland of Sitewide Importance. The project site is not under a Williamson Act contract. In addition, the project site is not zoned forest land (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]). Finally, the project site is designated for

[4] New residents were calculated by multiplying the proposed number of residential units by the average persons per household (177 units x 2.63 persons per household = 466 new residents).

[5] Maximum allowable residents estimated under the new land use designation of the project site were calculated using the following formula: (12.51 net acres x 17 du/a) = 212.67 dwelling units x 2.63 persons per household = 559.32 residents.

[6] United States Census Bureau. *QuickFacts: Sacramento city, California*. Available at: https://www.census.gov/quickfacts/sacramentocitycalifornia. Accessed March 2022.

[7] California Department of Conservation. *California Important Farmland Finder*. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed December 2021.

residential development in the General Plan and Community Plan. Thus, analysis of development of the site as such and potential impacts related to agricultural resources that might occur were already addressed in the Master EIR analysis.

Based on the above, the proposed project would not result in impacts related to agricultural resources.

Wildfire

The Master EIR does not identify any significant impacts related to wildfire risk. Per the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resources Assessment Program (FRAP), the City of Sacramento is located within a Local Responsibility Area (LRA).[8] The City is not located within or adjacent to a State Responsibility Area (SRA) or a designated Very High Fire Hazard Severity Zone (FHSZ). Furthermore, the project site is located within a generally developed area where a substantial wildland-urban interface does not exist. Thus, the risk of wildfire at the project site is minimal.

Based on the above, the proposed project would not create a substantial risk for existing development in the project vicinity.

[8] California Department of Forestry and Fire Protection. *Fire Hazard Severity Zones Maps.* Available at: https://egis.fire.ca.gov/FHSZ/. Accessed December 2021.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
1. AESTHETICS Would the proposal: A) Create a new source of glare that would cause a public hazard or annoyance?			X
B) Create a new source of light that would be cast onto oncoming traffic or residential uses?			X
C) Substantially degrade the existing visual character of the site or its surroundings?			X

ENVIRONMENTAL SETTING

The currently undeveloped project site is bound by a levee and Robla Creek to the north, the Sacramento Northern Bicycle Trail to the east, a currently undeveloped site planned for multi-unit residential development to the south, and Rio Linda Boulevard to the west. Surrounding existing land uses include agricultural land to the north, across Robla Creek; one single-unit residence and agricultural land, across the Sacramento Northern Bike Trail, and a single-unit residential neighborhood to the east, beyond Rose Street; Robla Elementary School to the southeast; single-unit residences to the south, along Claire Avenue; and two single-unit residences and agricultural land to the west, across Rio Linda Boulevard.

Existing public views towards the project site include views from motorists, bicyclists, and pedestrians travelling on Rio Linda Boulevard and Rose Street, as well as from bicycles and pedestrians travelling along the Sacramento Northern Bike Trail. Public views of the project site from the aforementioned vantage points are partially obscured in certain areas due to existing trees along the roadways and bike trail.

Existing scenic resources in the City include major natural open space features such as the American River and Sacramento River, including associated parkways. In addition, the State Capitol is a scenic resource within the City defined by the Capitol View Protection Ordinance. The project site does not contain scenic resources and is not located within an area designated as a scenic resource or vista. The California Department of Transportation (Caltrans) manages the State Scenic Highway System, which provides guidance and assists local government agencies with the process to officially designate scenic highways. According to Caltrans, designated scenic highways are not located in proximity to the project site and the project site is not visible from any State-designated scenic highways.[9]

STANDARDS OF SIGNIFICANCE

The significance criteria used to evaluate the project impacts to aesthetics are based on Appendix G of the CEQA Guidelines, thresholds of significance adopted by the City in applicable general plans and previous environmental documents, and professional judgment. A significant impact related to aesthetics would occur if the project would:

- Substantially interfere with an important scenic resource or substantially degrade the view of an existing scenic resource; or
- Create a new source of substantial light or glare that is substantially greater than typical urban sources and could cause sustained annoyance or hazard for nearby sensitive receptors.

[9] California Department of Transportation. *California Scenic Highway Mapping System, Sacramento County.* Available at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=2e921695c43643b1aaf7000dfcc19983. Accessed December 2021.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR described the existing visual conditions in the City of Sacramento, and the potential changes to those conditions that could result from development consistent with the 2035 General Plan. See Master EIR, Chapter 4.13, Visual Resources.

The Master EIR identified potential impacts for light and glare (Impact 4.13-1) and concluded that impacts would be less than significant.

ANSWERS TO CHECKLIST QUESTIONS

Questions A and B

According to the Master EIR, the City of Sacramento is mostly built out, and a large amount of ambient light from urban uses already exists. New development under the Sacramento General Plan could add sources of light that are similar to the existing urban light sources from one of the following: exterior building lighting, new street lighting, parking lot lights, and headlights of vehicular traffic. Sensitive land uses would generally be residential uses, especially single- and multi-unit residences. The nearest residential uses to the project site would be the single-unit residences located approximately 147 feet east, approximately 278 feet west, and approximately 570 feet south of the project site. Potential new sources of light associated with development and operation of the proposed project would be similar to the existing residential uses in the vicinity of the project site.

Because the City of Sacramento is mostly built out with a level of ambient light that is typical of and consistent with the urban character of a large city and new development allowed under the 2035 General Plan would be subject to the applicable General Plan policies, building codes, and (for larger projects) Design Review, the introduction of substantially greater intensity or dispersal of light would not occur. For example, Policy ER 7.1.3. Lighting requires that misdirected, excessive, or unnecessary outdoor lighting be minimized. In addition, Policy ER 7.1.4: Reflective Glass prohibits new development from resulting in any of the following:

(1) using reflective glass that exceeds 50 percent of any building surface and on the bottom three floors;
(2) using mirrored glass;
(3) using black glass that exceeds 25 percent of any surface of a building;
(4) using metal building materials that exceed 50 percent of any street-facing surface of a primarily residential building; and
(5) using exposed concrete that exceeds 50 percent of any building.

While the proposed project would introduce new sources of light and glare to the project site, the type and intensity of light and glare would be similar to that of the surrounding developments. The proposed project would be required to comply with the aforementioned General Plan policies, which would be ensured through the Site Plan and Design Review process. Through compliance with applicable General Plan policies, development of the site with the proposed project would not be expected to cause a public annoyance or be cast onto oncoming traffic or nearby residential uses. In addition, the project site has already been anticipated for development under the General Plan, and, thus, impacts related to light and glare associated with the development have been anticipated in the Master EIR. Furthermore, impacts related to aesthetics were analyzed as part of the Master EIR and were concluded to be less than significant, with compliance with all applicable General Plan goals and policies. The proposed project would comply with all applicable policies set forth in the General Plan pertaining to land use and the preservation of visual resources, as well as all applicable regulations set forth in the Sacramento City Code.

Based on the above, the proposed project would result in a ***less-than-significant*** impact regarding sources of glare and new light sources.

Question C

New development associated with the 2035 General Plan could result in changes to important scenic resources as seen from visually sensitive locations. Existing scenic resources include the aforementioned sites described in the Environmental Setting section above. Other potential important scenic resources include important historic structures listed on the Sacramento, California, and/or National Registers of Historic and Cultural Resources.

Visually sensitive public locations include viewpoints where a change to the visibility of an important scenic resource, or a visual change to the resource itself, would affect the general public. Visually sensitive public locations include public plazas, trails, parks, parkways, or designated, publicly available and important scenic corridors (e.g., Capitol View Protection Corridor).

The proposed project is not located near visual resources such as the Sacramento River, American River, or the State Capitol. While the project site is approximately 60 feet west of the Sacramento Northern Bike Trail, the proposed project would not include modifications to the trail beyond the addition of access points from the project site to the trail. In addition, the project site has already been planned for single-unit residential development in the General Plan and Community Plan. Although the project will allow a slightly higher density than previously analyzed, views would be similar to what was already anticipated and analyzed in the Master EIR. Furthermore, the proposed project would generally be visually consistent with the single-unit residential development in the project vicinity.

General Plan Policy LU 2.7.2 provides that the City shall require Site Plan and Design Review that focuses on achieving appropriate form and function for new projects to promote creativity, innovation, and design quality. As such, City staff would conduct Site Plan and Design Review prior to implementation of the proposed project. As noted in Chapter 17.808 of the Sacramento City Code, the purpose of Site Plan and Design Review is to ensure that the physical aspects of development projects are consistent with the General Plan and any other applicable specific plans or design guidelines, and that projects are high quality and compatible with surrounding development, among other considerations. Accordingly, Site Plan and Design Review for the proposed project would ensure that the project would not result in a substantial degradation of the existing visual character of the site or the surrounding area.

Impacts related to aesthetics were analyzed as part of the Master EIR and were concluded to be less than significant, with compliance with all applicable General Plan goals and policies. The proposed project would comply with all applicable policies set forth in the General Plan pertaining to land use and the preservation of visual resources, as well as all applicable regulations set forth in the Sacramento City Code.

Based on the above, development of the project site with uses proposed by the project was generally anticipated as part of buildout facilitated by the General Plan. Therefore, the proposed project would result in a ***less-than-significant*** impact.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Aesthetics.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
2. AIR QUALITY Would the project: A) Result in construction emissions of NO_x above 85 pounds per day?			X
B) Result in operational emissions of NO_x or ROG above 65 pounds per day?			X
C) Violate any air quality standard or have a cumulatively considerable contribution to an existing or projected air quality violation?			X
D) Result in PM_{10} and $PM_{2.5}$ concentrations that exceed SAMQMD requirements?			X
E) Result in CO concentrations that exceed the 1-hour state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm)?			X
F) Result in exposure of sensitive receptors to substantial pollutant concentrations?		X	
G) Result in TAC exposures create a risk of 10 in 1 million for stationary sources, or substantially increase the risk of exposure to TACs from mobile sources?		X	

ENVIRONMENTAL SETTING

The City of Sacramento is located within the Sacramento Valley Air Basin (SVAB), which is a valley bounded by the North Coast Mountain Ranges to the west and the Northern Sierra Nevada Mountains to the east. The terrain in the valley is flat and approximately 25 feet above sea level. The City, including the project site, is located within the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD).

Hot, dry summers and mild, rainy winters characterize the Mediterranean climate of the Sacramento Valley. Throughout the year, daily temperatures may range by 20 degrees Fahrenheit with summer highs often exceeding 100 degrees and winter lows occasionally below freezing. Average annual rainfall is about 20 inches and snowfall is very rare. Summertime temperatures are normally moderated by the presence of the "Delta breeze" that arrives through the Carquinez Strait in the evening hours.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants in the valley. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions that trap cooler air and pollutants near the ground.

The warmer months in the SVAB (May through October) are characterized by stagnant morning air or light winds, and the Delta breeze that arrives in the evening out of the southwest. Usually, the evening breeze transports a portion of airborne pollutants to the north and out of the Sacramento Valley. During about half of the day from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out of the

valley, the Schultz Eddy causes the wind pattern to circle back south. This phenomenon exacerbates the pollution levels in the area and increases the likelihood of violating Federal or State standards. The Schultz Eddy normally dissipates around noon when the Delta breeze begins.

Criteria Air Pollutants

Concentrations of emissions from criteria air pollutants (the most prevalent air pollutants known to be harmful to human health) are used to indicate the quality of the ambient air. Criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead. The sources of criteria air pollutants and their respective acute and chronic health impacts are described in Table 1.

Existing Air Quality

The U.S. Environmental Protection Agency (EPA) has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970 and most recently amended by Congress in 1990. The CAA required EPA to establish the National Ambient Air Quality Standards (NAAQS) for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. CAA also requires each State to prepare a State implementation plan (SIP) for attaining and maintaining the NAAQS. The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. Individual SIPs are modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies.

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish its own California Ambient Air Quality Standards (CAAQS). CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS.

The SVAB is currently designated as nonattainment for the NAAQS 8-hour ozone standard and the CAAQS for both 1-hour and 8-hour O_3 standard. The SVAB is also currently designated as nonattainment for both NAAQS and CAAQS 24-hour PM_{10} standards. In addition, the SVAB is currently designated as nonattainment for the NAAQS 24-hour $PM_{2.5}$ standard. The air basin is designated as unclassified or in attainment for the remaining criteria air pollutants (SMAQMD 2019).

Toxic Air Contaminants

According to the California Almanac of Emissions and Air Quality (CARB 2013), the majority of the estimated health risks from toxic air contaminants (TACs) can be attributed to relatively few compounds, the most important being diesel particulate matter (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Table 1
Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	Secondary pollutant resulting from reaction of ROG and NO_X in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X results from the combustion of fuels	Increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	Permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	Headache, dizziness, fatigue, nausea, vomiting, death	Permanent heart and brain damage
Nitrogen dioxide (NO_2)	Combustion devices; e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	Coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, death	Chronic bronchitis, decreased lung function
Sulfur dioxide (SO_2)	Coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}), Fine particulate matter ($PM_{2.5}$)	Fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the Atmosphere by condensation and/or transformation of SO2 and ROG	Breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, Premature death	Alterations to the immune system, carcinogenesis
Lead	Metal processing	Reproductive/developmental effects (fetuses and children)	Numerous effects including neurological, endocrine, and cardiovascular effects

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases.
1. "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.
2. "Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.

Source: EPA, 2018.

Sensitive Receptors

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants. The closest sensitive receptors to the project site include the single-unit residences located approximately 147 feet east of the project site, and the Robla Elementary School located approximately 320 feet to the southeast.

STANDARDS OF SIGNIFICANCE

For purposes of this Initial Study, air quality impacts may be considered significant if construction and/or implementation of the proposed project would result in the following impacts that remain significant after implementation of 2035 General Plan policies:

- Construction emissions of NO_X above 85 pounds per day;
- Operational emissions of NO_X or ROG above 65 pounds per day;
- Violation of any air quality standard or contribute substantially to an existing or projected air quality violation;
- Any increase in PM_{10} concentrations, unless all feasible Best Available Control Technology (BACT) and Best Management Practices (BMPs) have been applied, then increases above 80 pounds per day or 14.6 tons per year;
- CO concentrations that exceed the 1-hour State ambient air quality standard (i.e., 20.0 ppm) or the 8-hour State ambient standard (i.e., 9.0 ppm); or
- Exposure of sensitive receptors to substantial pollutant concentrations.

Ambient air quality standards have not been established for toxic air contaminants (TAC). TAC exposure is deemed to be significant if:

- TAC exposures create a risk of 10 in 1 million for stationary sources, or substantially increase the risk of exposure to TACs from mobile sources.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR addressed the potential effects of the 2035 General Plan on ambient air quality and the potential for exposure of people, especially sensitive receptors such as children or the elderly, to unhealthful pollutant concentrations. See Master EIR, Chapter 4.2.

Policies in the 2035 General Plan in Environmental Resources were identified as mitigating potential effects of development that could occur under the 2035 General Plan. For example, Policy ER 6.1.1 calls for the City to work with the California Air Resources Board and the Sacramento Metropolitan Air Quality Management District (SMAQMD) to meet state and federal air quality standards; Policy ER 6.1.2 requires the City to review proposed development projects to ensure that the projects incorporate feasible measures that reduce construction and operational emissions; Policy ER 6.1.4 and ER 6.1.11 calls for coordination of City efforts with SMAQMD; and Policy ER 6.1.15 requires the City to give preference to contractors using reduced-emission equipment.

The Master EIR identified exposure to sources of toxic air contaminants (TAC) as a potential effect. Policies in the 2035 General Plan would reduce the effect to a less-than-significant level. The policies include ER 6.1.4, requiring coordination with SMAQMD in evaluating exposure of sensitive receptors to TACs, and impose appropriate conditions on projects to protect public health and safety; as well as Policy LU 2.7.5 requiring extensive landscaping and trees along freeways fronting elevation and design elements that provide proper filtering, ventilation, and exhaust of vehicle air emissions from buildings.

ANSWERS TO CHECKLIST QUESTIONS

Questions A through D

Implementation of the proposed project would contribute local emissions in the area during both construction and operations of the proposed project. In order to evaluate ozone and other criteria air pollutant emissions and support attainment goals for those pollutants that the area is designated nonattainment, the SMAQMD has established recommended thresholds of significance, including mass emission thresholds for construction-related and operational ozone precursors, as the area is under nonattainment for ozone. The SMAQMD's recommended thresholds of significance for the ozone precursors reactive organic gases (ROG) and nitrous oxides (NO_X), particulate matter 10 microns in diameter or less (PM_{10}), and particulate matter 2.5

microns in diameter or less ($PM_{2.5}$), which are expressed in pounds per day (lbs/day), are presented in Table 2.

Table 2
SMAQMD Thresholds of Significance (lbs/day)

Pollutant	Construction Thresholds	Operational Thresholds
NO_X	85	65
ROG	-	65
PM_{10}*	80	80
$PM_{2.5}$*	82	82

* The thresholds of significance for PM_{10} and $PM_{2.5}$ presented above are only applicable if all feasible BACT/BMPs are applied. If all feasible BACT/BMPs are not applied, then the applicable threshold is zero. All feasible BACT/BMPs would be applied to the proposed project.

Source: Sacramento Metropolitan Air Quality Management District. SMAQMD Thresholds of Significance Table. April 2020.

Because construction equipment emits relatively low levels of ROG, and ROG emissions from other construction processes (e.g., asphalt paving, architectural coatings) are typically regulated by SMAQMD, SMAQMD has not adopted a construction emissions threshold for ROG. SMAQMD has, however, adopted a construction emissions threshold for NO_X, as shown in Table 2, above.

In order to determine whether the proposed project would result in criteria pollutant emissions in excess of the applicable thresholds of significance presented above, the proposed project's emissions have been estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0 software – a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers (ITE) Manual, vehicle mix, trip length, average speed, etc. However, where project-specific data is available, such data should be input into the model. Accordingly, based on an analysis provided by DKS Associates for the proposed project, trip generation rates and vehicle miles traveled (VMT) were updated to reflect project details.[10]

The results of the proposed project's emissions estimates were compared to the thresholds of significance above in order to determine the associated level of impact. All CalEEMod modeling results are included as Appendix A to this IS/MND.

Construction Emissions

During construction of the proposed project, various types of equipment and vehicles would operate on the project site. Construction exhaust emissions would be generated from construction equipment, any earth-moving activities, construction workers' commute, and material hauling for the entire construction period. These activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants.

According to the CalEEMod results, the proposed project is estimated to result in maximum daily construction emissions as shown in Table 3.

As shown in the table, the proposed project's maximum unmitigated construction-related emissions would be below the applicable thresholds of significance. In addition, all projects under the jurisdiction of SMAQMD are required to comply with all applicable SMAQMD rules and regulations (a complete list of current rules is available at www.airquality.org/rules). Rules and regulations related to construction include, but not limited to, Rule 201 (General Permit Requirements), Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Rule 404 (Particulate Matter), Rule 414 (Water Heaters, Boilers and Process Heaters Rated Less Than 1,000,000 British Thermal Units per Hour), Rule 417 (Wood Burning Appliances), Rule 442 (Architectural

[10] DKS Associates. *VMT Analysis.* April 1, 2022.

Coatings), Rule 453 (Cutback and Emulsified Asphalt Paving Materials), Rule 460 (Adhesives and Sealants), Rule 902 (Asbestos) and California Code of Regulations (CCR) requirements related to the registration of portable equipment and anti-idling. Furthermore, all projects are required to implement the SMAQMD's Basic Construction Emission Control Practices (BCECP). Compliance with SMAQMD rules and regulations and BCECP would ensure that construction emissions are minimized to the extent practicable, and would reduce emissions below the level presented in Table 3. Therefore, impacts related to the proposed project's construction emissions would be less than significant.

Table 3
Maximum Unmitigated Project Construction Emissions

Pollutant	Project Emissions (lbs/day)	SMAQMD Threshold of Significance (lbs/day)
NO_X	38.89	85
PM_{10}	21.41	80
$PM_{2.5}$	11.62	82

Source: CalEEMod, April 2022 (see Appendix A).

Operational Emissions

SMAQMD has developed screening criteria to aid in determining if emissions from development projects would exceed the SMAQMD thresholds of significance presented in Table 2. The screening criteria provides a conservative indication of whether a development project could result in potentially significant air quality impacts. According to SMAQMD, if a project is below the screening level identified for the applicable land use type, emissions from the operation of the project would have a less-than-significant impact on air quality. The screening criterion for operational emissions associated with single-unit housing is 485 units for ozone precursors and 1,000 units for particulate matter.[11] The proposed project involves the development of 177 units, which would be below the operational screening criteria for both categories of criteria pollutants. Therefore, based on the SMAQMD's screening criteria, the proposed project's operational emissions would not be expected to exceed SMAQMD thresholds of significance.

Nonetheless, to confirm this conclusion, operational air quality emissions were estimated using CalEEMod, and are presented in Table 4.

Table 4
Maximum Unmitigated Project Operational Emissions

Pollutant	Project Emissions (lbs/day)	SMAQMD Threshold of Significance (lbs/day)
NO_X	13.53	65
ROG	6.65	65
PM_{10}	8.63	80
$PM_{2.5}$	2.46	82

Source: CalEEMod, April 2022 (see Appendix A).

As shown in the table, the proposed project's maximum unmitigated operational emissions of criteria pollutants would be below the applicable thresholds of significance and, as a result, impacts related to operational emissions would be considered less than significant.

Cumulative Emissions

SMAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with applicable air quality plans. As future attainment of AAQS is a function of successful implementation of SMAQMD's planning efforts, according to the SMAQMD Guide, by exceeding the SMAQMD's project-level thresholds for construction or operational emissions, a

[11] Sacramento Metropolitan Air Quality Management District. *SMAQMD Operational Screening Levels*. April 2018.

project could contribute to the region's nonattainment status for ozone and PM emissions and could be considered to conflict with or obstruct implementation of the SMAQMD's air quality planning efforts.
As discussed above, the proposed project would result in construction and operational emissions below all applicable SMAQMD thresholds of significance. Therefore, the proposed project would not be considered to contribute to the region's nonattainment status for ozone or PM emissions and would not conflict with or obstruct implementation of the SMAQMD's air quality planning efforts. Accordingly, the proposed project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, and a less-than-significant impact would occur.

Conclusion

As discussed above, construction of the proposed project would result in emissions below the thresholds of significance. In addition, due to the project size, the project would be below the operational screening criteria developed by SMAQMD. Thus, the proposed project would not result in construction or operational emissions in excess of the applicable thresholds of significance. Because the proposed project would result in emissions below the applicable thresholds of significance during both construction and operations, the proposed project would not violate an AAQS, contribute substantially to an existing or projected air quality violation, or result in PM concentrations greater than the applicable thresholds. Therefore, impacts would be ***less than significant***.

Question E

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Per the SMAQMD Guide, emissions of CO are generally of less concern than other criteria pollutants, as operational activities are not likely to generate substantial quantities of CO, and the SVAB has been in attainment for CO for multiple years.[12] The proposed project would not involve operational changes that could result in long-term generation of CO. The use of construction equipment at each site would result in limited generation of CO; however, the total amount of CO emitted by construction equipment would be minimal and would not have the potential to result in health risks to any nearby receptors. Consequently, the proposed project would result in a ***less-than-significant*** impact related to localized CO emissions.

Question F and G

Areas to the south and east of the project site have already been developed. The closest existing sensitive receptors to the project site are the single-unit residences located approximately 147 feet east of the project site. In addition, Robla Elementary School is located approximately 320 feet southeast of the site.

TAC Emissions

The CARB Handbook provides recommendations for siting new sensitive land uses near sources typically associated with significant levels of TAC emissions, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified DPM from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks from TACs are a function of both the concentration of emissions and the duration of exposure.

Operational-related emissions of TACs are typically associated with stationary diesel engines or land uses that involve heavy diesel truck traffic or idling. Residential land uses, such as the proposed project, do not typically involve long-term operation of any stationary diesel engine, frequent use of heavy-duty trucks, or other major on-site stationary source of TACs. Therefore, the proposed project would not expose any existing sensitive receptors to any new permanent or substantial TAC emissions during operations.

[12] Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment, Chapter 4: Operational Criteria Air Pollutant and Precursor Emissions*. October 2020.

However, short-term, construction-related activities could result in the generation of TACs, primarily DPM, from on-road haul trucks and off-road equipment exhaust emissions. Although DPM emissions from on-road haul trucks would be widely dispersed throughout the project area, as haul trucks move goods and material to and from the site, exhaust from off-road equipment would primarily occur within the project site. Consequently, the operation of off-road equipment within the project site during project construction could result in exposure of nearby residents and students to DPM.

To analyze potential health risks to nearby residents and students that could result from DPM emissions from off-road equipment at the project site, total DPM emissions from project construction were estimated. DPM is considered a subset of $PM_{2.5}$, thus, the CalEEMod estimated $PM_{2.5}$ emissions from exhaust during construction was conservatively assumed to represent all DPM emitted on-site. The CalEEMod estimated $PM_{2.5}$ exhaust emissions were then used to calculate the concentration of DPM at the maximally exposed sensitive receptor near the project site. DPM concentrations resulting from project implementation were estimated using the American Meteorological Society/Environmental Protection Agency (AMS/EPA) Regulatory Model (AERMOD). The results of AERMOD are presented in Figure 7. As presented therein, the maximally exposed receptor, depicted by a white "X", is located southwest of the project site.

The associated cancer risk and non-cancer hazard index were calculated using the CARB's Hotspot Analysis Reporting Program Version 2 (HARP 2) Risk Assessment Standalone Tool (RAST), which calculates the cancer and non-cancer health impacts using the risk assessment guidelines of the 2015 Office of Environmental Health Hazard Assessment (OEHHA) Guidance Manual for Preparation of Health Risk Assessments.[13] The modeling was performed in accordance with the USEPA's User's Guide for the AERMOD[14] and the 2015 OEHHA Guidance Manual.

Based on the foregoing methodology, the cancer risk and non-cancer hazard indices were estimated and are presented in Table 5.

Table 5
Maximum Unmitigated Cancer Risk and Hazard Index Associated with Project Construction DPM

	Cancer Risk (per million persons)	Acute Hazard Index	Chronic Hazard Index
Construction DPM Health Risks	18.1	0.00	0.01
Thresholds of Significance	10	1.0	1.0
Exceed Thresholds?	**YES**	**NO**	**NO**

Source: AERMOD and HARP 2 RAST, March 2022 (see Appendix A).

As shown in Table 5, construction of the proposed project would not result in acute or chronic hazards in excess of SMAQMD's standards. However, project construction would conservatively have the potential to result in cancer risks in excess of SMAQMD's 10 cases per million threshold. Thus, construction of the proposed project could result in exposure of nearby receptors to substantial pollutant concentrations.

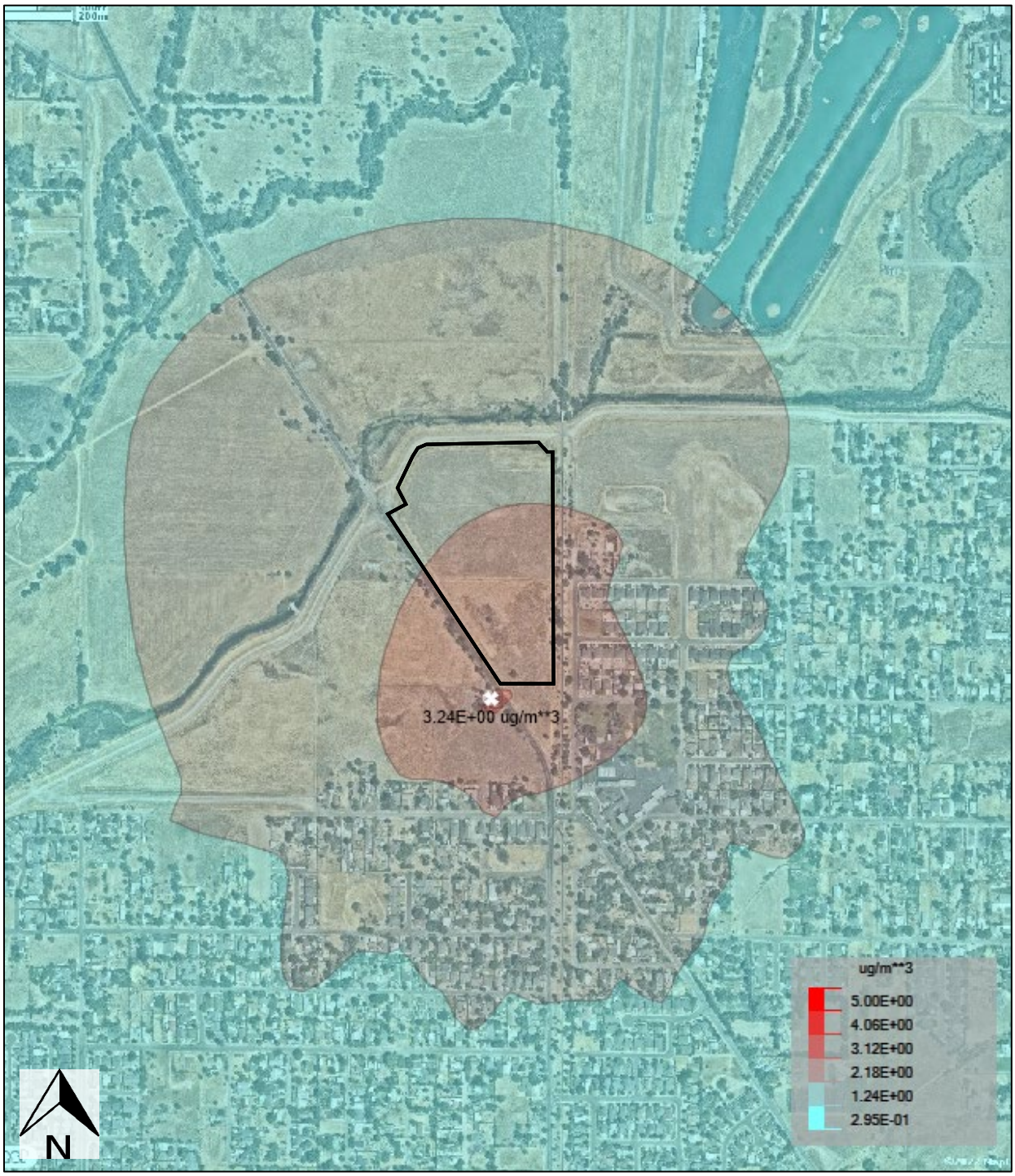
Conclusion

Based on the above, the proposed project would not cause or be exposed to substantial concentrations of localized CO. However, construction activities associated with implementation of the proposed project would generate DPM concentrations that could result in health risks that exceed the SMAQMD's thresholds of significance. Therefore, exposure of sensitive receptors to substantial pollutant concentrations could occur as a result of the proposed project, and impacts would be potentially significant. With implementation of Mitigation Measure 2-1, the ***effect can be mitigated to less than significant***.

[13] Office of Environmental Health Hazard Assessment. *Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments* [pg. 8-18]. February 2015.

[14] U.S. Environmental Protection Agency. *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*. December 2016.

Figure 9
AERMOD Results



Source: AERMOD, March 2022 (see Appendix A).

MITIGATION MEASURES

The most effective way to reduce construction-related DPM emissions is by improving the engine tier/engine efficiency of construction equipment. Off-road diesel engines that are used in construction equipment fall into efficiency tiers, with the most efficient being the Tier 4 emission standards. Engine Tiers 3 through 1 are regressively less efficient. Based on modeling conducted, as demonstrated in Table 6, use of higher tier construction equipment for all construction activities would ensure that DPM emissions from construction equipment do not result in increased health risks to nearby receptors in excess of SMAQMD's standards. Consequently, implementation of the following mitigation measure would reduce impacts related to Air Quality to a *less-than-significant* level.

Table 6
Maximum Mitigated Cancer Risk and Hazard Index Associated with Project Construction DPM

	Cancer Risk (per million persons)	Acute Hazard Index	Chronic Hazard Index
Construction DPM Health Risks	9.97	0.00	0.01
Thresholds of Significance	10	1.0	1.0
Exceed Thresholds?	**NO**	**NO**	**NO**

Source: AERMOD and HARP 2 RAST, March 2022 (see Appendix A).

2-1 *Prior to the initiation of ground disturbance, the project applicant shall show on the plans via notation that the contractor shall ensure that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, shall not generate $PM_{2.5}$ emissions in excess of 0.0512 tons $PM_{2.5}$ per year. The $PM_{2.5}$ reduction shall be achieved by requiring a combination of engine Tier 4 off-road construction equipment or the use of hybrid, electric, or alternatively fueled equipment.*

In addition, all off-road equipment working at the construction site must be maintained in proper working condition according to manufacturer's specifications. Idling shall be limited to five minutes or less in accordance with the Off-Road Diesel Fueled Fleet Regulation as required by CARB. Portable equipment over 50 horsepower must have either a valid District Permit to Operate (PTO) or a valid statewide Portable Equipment Registration Program (PERP) placard and sticker issued by CARB.

The aforementioned requirements shall be noted on Grading Plans and submitted for review and approval by the City of Sacramento Community Development Department.

FINDINGS

All additional significant environmental effects of the project relating to Air Quality can be mitigated to a less-than-significant level.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
3. BIOLOGICAL RESOURCES Would the project: A) Create a potential health hazard, or use, production or disposal of materials that would pose a hazard to plant or animal populations in the area affected?			X
B) Result in substantial degradation of the quality of the environment, reduction of the habitat, reduction of population below self-sustaining levels of threatened or endangered species of plant or animal species?		X	
C) Affect other species of special concern to agencies or natural resource organizations (such as regulatory waters and wetlands)?			X

ENVIRONMENTAL SETTING

Prior to human development, the natural habitats within the region included perennial grasslands, riparian woodlands, oak woodlands, and a variety of wetlands including vernal pools, seasonal wetlands, freshwater marshes, ponds, streams, and rivers. Over the last 150 years, agriculture, irrigation, flood control, and urbanization have resulted in the loss or alteration of much of the natural habitat within the City limits. Non-native annual grasses have replaced the native perennial grasslands, many of the natural streams have been channelized, much of the riparian and oak woodlands have been cleared, and most of the marshes have been drained and converted to agricultural or urban uses.

Though the majority of the City is developed with residential, commercial, and other urban development, valuable plant and wildlife habitat still exists. The natural habitats are located primarily outside the City boundaries in the northern, southern and eastern portions of the City, but also occur along river and stream corridors and on a number of undeveloped parcels throughout the City. Habitats that are present in the City include annual grasslands, riparian woodlands, oak woodlands, riverine, ponds, freshwater marshes, seasonal wetlands, and vernal pools.

A Biological Resources Assessment (BRA) (see Appendix C) and Wetland Delineation (see Appendix D) were prepared by Salix Consulting Inc. for the proposed project.[15,16] The study area assessed within the BRA and Wetland Delineation extends approximately ten feet beyond the boundaries of the project site, running adjacent to the access road in the north, the Sacramento Northern Bike Trail to the east, and Rio Linda Boulevard to the west.

A search of the California Natural Diversity Database (CNDDB) was performed for the project site quadrangle (Rio Linda) as well as the surrounding quadrangles (i.e., Citrus Heights, Sacramento East, and Taylor Monument) to determine which special-status plant and wildlife species are known to occur within the region. Four potentially occurring plant species were identified in the queries, and all four of the species were identified as occurring within a five-mile radius of the project site. Field surveys were also conducted on May 3, 2020 and June 3, 2020, to further determine the presence of special-status plant and wildlife species within the project site. In addition, California Tree and Landscape Consulting, Inc. conducted a tree

[15] Salix Consulting Inc. *Biological Resources Assessment for the Robla Estates Study Area.* June 2020.
[16] Salix Consulting Inc. *Wetland Delineation for the Robla Estates Study Area.* June 2020.

survey and prepared an Arborist Report for the project site (see Appendix B). The project-specific setting related to biological resources described below is based upon such reports.

Vegetation

The majority of the BRA study area consists of disturbed annual ruderal grassland that is regularly disked. Woody vegetation is minimal, represented by scattered trees and saplings, mostly in the southern portion of the site. Four potentially occurring plant species were identified in the CNDDB and CNPS queries, and all four species were identified as occurring within a five-mile radius of the BRA study area. The four species identified were Sanford's arrowhead, dwarf downingia, legenere, and Bogg's Lake hedge-hyssop.

Wildlife

The project site, which is bordered on one side by a busy avenue and on the other by a heavily trafficked bike trail, is regularly disked and occurs in a suburban area with high human activity. Due to the disturbed nature of the land to the east and south of the project site, the potential for a diversified amount of wildlife is anticipated to be very low. However, wire fencing and fence-posts around the perimeter of the project site provide perches, and mixed woodland along the eastern boundary of the site provides potential foraging and nesting habitats for many common bird species that are adapted to urban areas. In addition, raptors may nest in the more suitable woody vegetation situated along the Robla Creek riparian corridor located direct north of the study area. During the field assessment, Swainson's hawks, Red-tailed hawks, and numerous cliff swallows were observed foraging on or near the project site.

The study area also contains piles of broken concrete that could provide shelter to smaller mammals or reptiles. Black-tailed jackrabbit and western fence lizard were each observed during the field assessment. A small population of California ground squirrel and a small number of associated burrows were also noted on the project site.

Of the 20 animal species identified in the CNDDB and USFWS queries, 13 were identified as occurring within or near the five-mile radius of the study area. Of the 13 identified as occurring near the project site, three were determined to have a potential to occur within the study area, including: vernal pool fairy shrimp, vernal pool tadpole shrimp, and burrowing owl.

Trees

Chapter 12.56, Tree Planting, Maintenance, and Conservation, of the Sacramento City Code establishes guidelines for the conversation, protection, removal, and replacement of both City trees and private protected trees. Per Section 12.56.020, a private protected tree meets at least one of the following criteria:

A. A tree that is designated by City Council resolution to have special historical value, special environmental value, or significant community benefit, and is located on private property;
B. Any native Valley Oak (*Quercus lobata*), Blue Oak (*Quercus douglasii*), Interior Live Oak (*Quercus wislizenii)*, Coast Live Oak (*Quercus agrifolia*), California Buckeye (*Aesculus californica*), or California Sycamore (*Platanus racemosa*), that has a diameter at standard height (DSH) of 12 inches or more, and is located on private property;
C. A tree that has a DSH of 24 inches or more located on private property that:
    a. Is an undeveloped lot; or
    b. Does not include any single unit or duplex dwellings; or
D. A tree that has a DSH of 32 inches or more located on private property that includes any single unit or duplex dwellings.

When circumstances do not allow for the retention of trees, permits are required to remove City trees or private protected trees that are within the City's jurisdiction. In addition, City Code Section 12.56.050, Tree Permits, states that no person shall perform regulated work without a tree permit. The Tree Permit application requires a statement detailing the nature and necessity for the proposed regulated work and the location of the proposed work for evaluation and approval by the City Council.

California Tree and Landscape Consulting, Inc. conducted a site survey from July 30, 2020 to August 14, 2020 to evaluate the trees located on-site and within 25 feet of the proposed development. A total of 46 trees were surveyed, 12 of which are located on the project site or within the street right-of-way, and 34 of which are along the Northern Sacramento Bike Path. It should be noted that not every tree lining the bike path was evaluated; only those that could potentially be impacted by the proposed project. Of the 46 trees surveyed, only seven are considered protected trees under City Code Chapter 12.56.

Jurisdictional Waters

The U.S. Army Corps of Engineers (USACE) has regulatory authority of "waters of the United States," which include wetlands, pursuant to Section 404 of the Clean Water Act (CWA). Waters of the U.S. include navigable waters, interstate waters, and all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. In addition, Section 401 of the CWA dictates that the Regional Water Quality Control Board (RWQCB) is responsible for regulated discharges of dredged or fill material to waters of the state.

Three seasonal wetlands are mapped in the study area totaling approximately 0.44-acre (see Figure 10). Seasonal Wetland 1 (SW-1), which is 0.12-acre in size and appears to be an excavated feature, is located in the western area of the site. SW-1 is approximately three feet deep and has exposed hardpan in the bottom. The wetland does not have an outlet, but the feature does not appear to fill to maximum. SW-1 supports a variable flora of mostly annual species, the most abundant being annual beard grass. Seasonal Wetland 2 (SW-2) is 0.12-acre and is located along the eastern study area boundary. SW-2 is generally a low area of the field near the outfall of a storm drain originating in the subdivision just east of the study area. The wetland supports a mix of seasonal wetland and vernal pool species. However, the wetland is compromised by frequent disking and the subtle edge of the wetland is covered by dense Italian ryegrass. Seasonal Wetland 3 (SW-3), approximately 0.20-acre in size, is located adjacent to SW-2 but is situated between the fence line and the bike trail within the mixed woodland strip. SW-3 is not as frequently disturbed and has a more well-defined edge. The wetland contains organic matter and is sparsely vegetated by Italian ryegrass, curly dock, and other wetland generalists. Although not located on the project site, a wetland swale is located between the levee near Robla Creek and Robla Creek. The constructed swale originates at an outfall situated beneath the levee, which drains ditches located on the south side of the levee.

STANDARDS OF SIGNIFICANCE

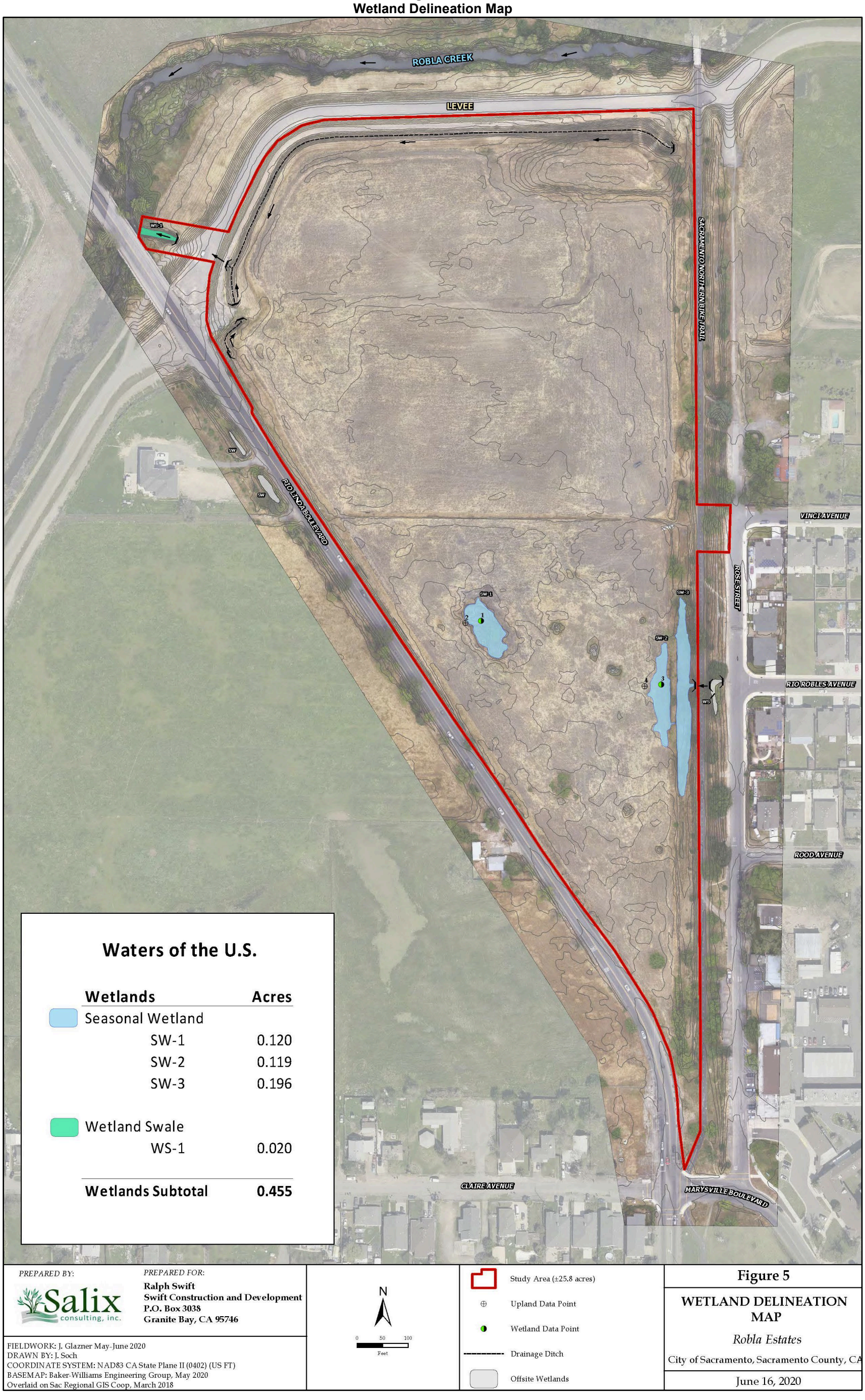
For purposes of this environmental document, an impact would be significant if any of the following conditions or potential thereof, would result with implementation of the proposed project:

- Creation of a potential health hazard, or use, production or disposal of materials that would pose a hazard to plant or animal populations in the area affected;
- Substantial degradation of the quality of the environment, reduction of the habitat, reduction of population below self-sustaining levels of threatened or endangered species of plant or animal; or
- Affect other species of special concern to agencies or natural resource organizations (such as regulatory waters and wetlands).

For the purposes of this document, "special-status" has been defined to include those species, which are:

- Listed as endangered or threatened under the federal Endangered Species Act (ESA) (or formally proposed for, or candidates for, listing);
- Listed as endangered or threatened under the California ESA (or proposed for listing);
- Designated as endangered or rare, pursuant to California Fish and Game Code (Section 1901);
- Designated as fully protected, pursuant to California Fish and Game Code (Section 3511, 4700, or 5050);
- Designated as species of concern by U.S. Fish and Wildlife Service (USFWS), or as species of special concern to California Department of Fish and Wildlife (CDFW);
- Plants or animals that meet the definition of rare or endangered under the CEQA.

Figure 10
Wetland Delineation Map



SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

Chapter 4.3 of the Master EIR evaluated the effects of the 2035 General Plan on biological resources within the City. The Master EIR identified potential impacts in terms of degradation of the quality of the environment or reduction of habitat or population below self-sustaining levels of special-status birds, through the loss of both nesting and foraging habitat.

Policies in the 2035 General Plan were identified as mitigating the effects of development that could occur under the provisions of the 2035 General Plan. Policy ER 2.1.5 calls for the City to preserve the ecological integrity of creek corridors and other riparian resources; Policy ER 2.1.10 requires the City to consider the potential impact on sensitive plants for each project and to require pre-construction surveys when appropriate; and Policy ER 2.1.11 requires the City to coordinate its actions with those of the California Department Fish and Wildlife, U.S. Fish and Wildlife Service, and other agencies in the protection of resources.

The Master EIR discussed biological resources in Chapter 4.3. The Master EIR concluded that policies in the General Plan, combined with compliance with the California Endangered Species Act, the Natomas Basin Conservancy Habitat Conservation Plan (NBHCP) (when applicable) and CEQA would minimize the impacts on special-status species to a less-than-significant level (see Impact 4.3-1), and that the General Plan policies, along with similar compliance with local, state and federal regulation would reduce impacts to a less-than-significant level for habitat for special-status invertebrates, birds, amphibians and reptiles, mammals and fish (Impacts 4.3-3-6).

Given the prevalence of rivers and streams in the incorporated area, impacts to riparian habitat is a common concern. Riparian habitats are known to exist throughout the City, especially along the Sacramento and American rivers and their tributaries. The Master EIR discussed impacts of development adjacent to riparian habitat that could disturb wildlife species that rely on these areas for shelter and food, and could also result in the degradation of these areas through the introduction of feral animals and contaminants that are typical of urban uses. The CDFW regulates potential impacts on lakes, streams, and associated riparian (streamside or lakeside) vegetation through the issuance of Lake or Streambed Alteration Agreements (SAA) (per Fish and Game Code Section 1602), and provides guidance to the City as a resource agency. While there are no federal regulations that specifically mandate the protection of riparian vegetation, federal regulations set forth in Section 404 of the Clean Water Act address areas that potentially contain riparian-type vegetation, such as wetlands.

The General Plan calls for the City to preserve the ecological integrity of creek corridors, canals and drainage ditches that support riparian resources (Policy ER 2.1.5) and wetlands (Policy ER 2.1.6) and requires habitat assessments and impact compensation for projects (Policy ER 2.1.10). The City has adopted a standard that requires coordination with State and federal agencies if a project has the potential to affect other species of special concern or habitats (including regulatory waters and wetlands) protected by agencies or natural resource organizations (Policy ER 2.1.11).

Implementation of 2035 General Plan Policy ER 2.1.5 would reduce the magnitude of potential impacts by requiring a 1:1 replacement of riparian habitat lost to development. While this would help mitigate impacts on riparian habitat, large open areas of riparian habitat used by wildlife could be lost and/or degraded directly and indirectly through development under the 2035 General Plan. Given the extent of urban development designated in the general plan, the preservation and/or restoration of riparian habitat would likely occur outside of the City limits. The Master EIR concluded that the permanent loss of riparian habitat would be a less-than-significant impact. (Impact 4.3-7)

ANSWERS TO CHECKLIST QUESTIONS

Question A

The use, handling, and storage of hazardous materials is regulated by both the Federal Occupational Safety and Health Administration (Fed/OSHA) and the California Occupational Safety and Health Administration

(Cal/OSHA). Cal/OSHA is responsible for developing and enforcing workplace safety regulations. At the local level, the Sacramento County Environmental Management Department regulates hazardous materials within Sacramento County, including chemical storage containers, businesses that use hazardous materials, and hazardous waste management.

The use and storage of hazardous materials is regulated by Section 8.64 of the Sacramento Municipal Code. Section 8.64.040 establishes regulation related to the designation of hazardous materials and requires that a hazardous material disclosure form be submitted within 15 days by any person using or handling a hazardous material. In addition, the routine transport, use, and disposal of hazardous materials are regulated by existing federal, State, and local regulations. For instance, the Sacramento County Environmental Management Department requires businesses handling sufficient quantities of hazardous materials to submit a Hazardous Materials Business Plan and obtain permitting.

Furthermore, residential uses are not typically associated with the routine transport, use, or disposal of hazardous materials, or present a reasonably foreseeable release of hazardous materials. Any hazardous materials associated with the residential uses would consist primarily of typical household cleaning products and fertilizers, which would be utilized in small quantities and in accordance with label instructions, which are based on federal and/or State health and safety regulations. Therefore, the proposed project would result in a ***less-than-significant*** impact related to creating a potential health significant hazard to plant or animal populations in the area.

Question B

As previously discussed, as part of the BRA prepared for this IS/MND, a search of CNDDB was performed for the project site quadrangle (Rio Linda) as well as the surrounding quadrangles (i.e., Citrus Heights, Sacramento East, and Taylor Monument) to determine which special-status plant and wildlife species are known to occur within the region. The results of the CNDDB query are discussed below**.**

Special-Status Plant Species

Four potentially occurring plant species were identified in the CNDDB query, and all four of the species were identified as occurring within a five-mile radius of the project site. One of the species, Sanford's arrowhead (*Sagittaria sanfordii*), is unlikely to occur within the project site due to lack of suitable habitat. Nearby Robla Creek could support the species, but the creek is located outside of the project site. The three-remaining special-status species found in the surrounding area (Dwarf downingia [*Downingia pusilla*], Legenere [*Legenere limosa*] and Bogg's Lake hedge-hyssop [*Gratiola heterosepala*]) were determined to be unlikely to occur on the project site due to the presence of very marginal habitat within the three seasonal wetlands present within the project site. In addition, a botanical survey of the project site was conducted and did not find occurrences of any of the three species.

Based on the above, the proposed project would not result in substantial degradation of the quality of the environment, reduction of the habitat, reduction of population below self-sustaining levels of threatened or endangered species of plant species.

Special-Status Wildlife Species

Of the special-status wildlife species identified as having the potential to exist in the project area, most were eliminated from further consideration due to habitat requirements (i.e., aquatic, wetland, grassland, and/or coastal habitats) which are not present at the project site. However, three animal species were determined to have some potential to occur within the project site: vernal pool fairy shrimp (*Branchinecta lynchi*); vernal pool tadpole shrimp (*Lepidurus packardi*); and burrowing owl (*Athene cunicularia*). Both shrimp species were determined to be unlikely to occur in the project site due to the seasonal wetlands within the project site being highly disturbed and providing very marginal habitat for the species. The burrowing owl was also determined to be unlikely to occur within the project site, because, although the project site contains a small number of ground squirrel burrows that provide suitable nesting habitat for the species, the site is regularly disked and highly disturbed by frequent human activity and noise from Rio Linda Boulevard. In addition, burrowing owls were not observed on the project site during the field assessment. Although unlikely, the

potential presence of protected species on the project site could result in a potentially significant impact to special-status wildlife species.

Trees within the project site and vicinity have the potential to provide nesting habitat for special-status bird species, including migratory birds and raptors protected under the California Fish and Game Code Section 3503 and the federal Migratory Bird Treaty Act (MBTA) of 1918 (Title 16 of U.S. Code [U.S.C.] Sections 703-711). Special-status birds have the potential to nest in the aforementioned trees, as well as trees in the vicinity of the project site, and could be disturbed by construction activities should construction occur during the bird nesting season. As such, construction of the project could affect suitable nesting habitat, and a potentially significant impact to nesting and migratory birds could occur.

Tree Removal

According to the Arborist Report prepared for the project, two trees present on the project site are proposed for removal due to health. In addition, the Arborist Report determined that at least two trees would be impacted by buildout of the project, and six more trees have the potential to be impacted. However, a total of seven protected trees are located within the study area. Therefore, without the implementation of the recommendations included in the Arborist Report, a potentially significant impact could occur related to the removal and/or damage to protected trees.

Conclusion

Based on the above, because implementation of the proposed project has a remote possibility of affecting vernal pool species, burrowing owls, and nesting raptors and migratory birds protected by the MBTA, the proposed project could result in a potentially significant impact. However, with implementation of Mitigation Measures 3-1 through 3-5, the project would result in a ***less-than-significant impact with mitigation incorporated***.

<u>Question C</u>

Currently, the project site is undeveloped. Residential development surrounds the eastern and southern boundaries of the project site. Existing water bodies or features, such as rivers or creeks do not exist on the project site. Although natural ditches do not exist on the project site, ditches run along the toe of the levee that follows the northern boundary of the project site and along a small portion of the toe of slope running parallel to the boundary in the northwestern area of the site. The ditches are connected to culverts that drain water from surrounding areas and to the culvert that drains to Robla Creek under the levee (at the northwest corner of the project site). The ditches carry minimal water and have not been mapped as potential waters of the U.S. In addition, as discussed above, three seasonal wetlands are located in the southern and eastern portion of the project site, and are currently being evaluated as potential waters of the US.

The proposed project would include a detention basin in the northwest corner of the site. Stormwater would be pumped by a new pump station to the existing 48-inch culvert under the levee to Robla Creek. In addition, high flow weirs are proposed at the Northern Channel and the East Channel, which would help to prevent off-site flows from entering the proposed detention basin. The proposed detention basin and pump station would be sized to accommodate all stormwater from the project site. A 12-inch detention basin overflow pipe would convey overflow from the detention basin through the levee and would discharge to a new outfall at the tow of the levee into rock energy dissipaters. Water sheetflows from the outfall location towards Robla Creek. The outfall location is situated in an upland annual grassland habitat dominated by weedy grass and forb species. The area from the tow of the levee slope to the creek is a flood terrace, but is below the Ordinary High Water Mark (OHWM). The OHWM is the line at the edge of a waterway that defines the limit of federal (USACE) jurisdiction. Along Robla Creek, the OHWM is much nearer the active channel and more than 50 feet away from the outfall location. Accordingly, the proposed outfall would not require a Section 404 or 401 permit. In addition, the outfall location is not considered habitat for any special-status

plant or animal species.[17] However, because the discharge would occur on the water side of the levee, a CDFW Section 1602 Lake and Streambed Alteration Agreement would be required.

Although the project site does not contain existing water body features such as rivers, creeks, or nationally significant natural ditches, the proposed project could have a substantially adverse effect on sensitive protected wetlands and/or CDFW regulated waters and vegetation. However, with implementation of Mitigation Measures 3-6 and 3-7, the project would result in a ***less-than-significant impact with mitigation incorporated***.

MITIGATION MEASURES

Implementation of Mitigation Measures 3-1 through 3-7 below would reduce the impacts identified above related to biological resources to a *less-than-significant* level.

Vernal Pool Species

3-1 *Prior to construction, the project applicant shall submit an Aquatic Resources Delineation Report to the USACE and RWQCB to determine if the seasonal wetlands on-site would be regulated by the USACE under Section 404 of the Clean Water Act and/or by the RWQCB under Section 401 of the Clean Water Act or the Porter-Cologne Water Quality Control Act. If the seasonal wetlands present on the project site are deemed to be waters of the U.S. and any are proposed to be filled by the proposed project, a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers would be required prior to any grading activities. If the U.S. Army Corps of Engineers determines the season wetlands to be habitat for the vernal pool fairy shrimp or the vernal pool tadpole shrimp, authorization from the USFWS is required. The authorization would happen through Section 7(ESA) consultation between the Corps of Engineers (the Federal Lead Agency) and the USFWS. RWQCB and USACE determinations, as well as proof of required permits, if any, shall be submitted to the City's Community Development Department for review.*

Burrowing Owl

3-2 *A qualified biologist shall conduct Take Avoidance Surveys at the project site in accordance with Appendix D of the Staff Report on Burrowing Owl Mitigation (CDFW 2012). An initial Take Avoidance Survey shall be conducted no less than 14 days prior to initiating ground disturbance activities and a final survey shall be conducted within 24 hours prior to ground disturbance. The preconstruction survey for burrowing owls shall include all potential burrowing owl habitat within 500 feet of the project. Portions of the survey area located on private land shall be surveyed from all publicly accessible areas. A written summary of the survey results shall be submitted to the City of Sacramento Community Development Department before any construction permits are issued. If burrowing owl are not detected during pre-construction surveys, further mitigation is not required. If active burrowing owl burrows are found, the following measures shall be implemented at the project site:*

- *During the non-breeding season (September 1 through January 31), the biologist shall establish a 160-foot ESA around the burrow. During the breeding season (February 1 through August 31), the biologist shall establish a 300-foot ESA around the burrow in consultation with CDFW.*
- *The size of the ESA may be reduced if the biologist monitors the construction activities and determines that disturbance to the burrowing owl is not occurring. Reduction of ESA size depends on the location of the burrow relative to the proposed disturbance area, project activities during the time the burrow is active, and other project-specific factors.*
- *If the burrow is located within the construction zone and it is during the non-breeding season, the burrowing owl shall be passively excluded from the burrow*

[17] Jeff Glazner, Principal, Salix Consulting, Inc. *Addendum letter addressing proposed outfall into Robla Creek Corridor*. May 23, 2022.

using one-way doors, as described in the Exclusion Plan of Appendix E of the CDFW's 2012 Staff Report on Burrowing Owl Mitigation.

- *If the burrow is located within the construction zone and it is during the breeding season, the burrow owl shall only be passively excluded if it has been confirmed that the owl has not begun egg laying and incubation, the clutch was unsuccessful, or juveniles from the occupied burrows are foraging independently and are capable of independent survival.*

Nesting Raptors and Migratory Birds

3-3 *If tree removal or other ground-disturbing activities are to begin during the breeding/nesting season for raptors or other protected bird species in the region (generally February 1 through August 31), a qualified biologist shall be retained by the project applicant to conduct pre-construction surveys in areas of suitable nesting habitat within two weeks prior to initiation of tree removal or ground disturbance. The pre-construction surveys shall be submitted to the City's Community Development Department. If active nests are not found, further mitigation is not required. If active nests are found, the construction contractor shall avoid impacts on such nests by establishing a no-disturbance buffer around the nest. The appropriate buffer size for all nesting birds shall be determined by a qualified biologist. Buffer size will vary depending on site-specific conditions, the species of nesting bird, nature of the project activity, the extent of existing disturbance in the area, visibility of the disturbance from the nest site, and other relevant circumstances. Construction activity shall not occur within the buffer area of an active nest and nests shall be monitored by a qualified biologist until a qualified biologist confirms that the chicks have fledged and are no longer dependent on the nest, or the nesting cycle has otherwise completed. Monitoring of the nest by a qualified biologist during construction activities shall be required if the activity has the potential to adversely affect the nest.*

.

Protected Trees

3-4 *Prior to issuance of grading permits, the plans shall note tree protection requirements stated within the Arborist Report prepared for the project. The measures shall be reflected on the grading plans, subject to review and approval by the City's Community Development Department.*

3-5 *Prior to issuance of a grading permit, the project applicant shall comply with tree permit requirements in effect at the time of project approval for removal, pruning, or soil disturbance within the canopy dripline of a private protected tree or City Street Tree. In addition, the following measures shall be implemented to reduce impacts from the removal of City Street Trees:*

a) Replacement trees for City Street Trees shall be replanted within the City right-of-way in coordination with the City's Urban Forester. If replacement trees for City Street Trees cannot be accommodated in the City's right-of-way, they shall be planted on site and incorporated into the project landscape plan or be planted at another off-site location at the City's direction.
b) Replacement plantings shall consist of shade tree species recommended by the Urban Forestry Director.
c) Tree planting shall comply with the City's landscaping requirements (City Code Sections 17.612.010 and 17.612.040).
d) Canopy or root pruning of any retained City Street Trees to accommodate construction and/or fire lane access shall be conducted according the American National Standards Institute (ANSI) standards and the International Society of Arboriculture (ISA) best management practices (BMPs) All City Street Trees shall be protected from construction-related impacts pursuant to Sacramento City Code Chapter 12.56).

The aforementioned measures shall be reflected on the grading plans, subject to review and approval by the City's Community Development Department.

Wetlands and/or Other Jurisdictional Waters

3-6 *Prior to construction, the project applicant shall submit an Aquatic Resources Delineation Report to the USACE and RWQCB to determine if the seasonal wetlands, roadside ditches, and agricultural ditches would be regulated by the USACE under Section 404 of the Clean Water Act and/or by the RWQCB under Section 401 of the Clean Water Act or the Porter-Cologne Water Quality Control Act. If the RWQCB and/or the USACE determines that the wetlands and non-wetland waters are not regulated under State and federal laws, further mitigation is not required.*

If the RWQCB and/or the USACE determines that the wetlands and non-wetland waters are regulated under State and federal laws, the project applicant shall obtain the required permits and implement any required compensation for the loss of waters of the U.S. and/or waters of the State. The actual mitigation ratio and associated credit acreage shall be based on USACE and RWQCB permitting, which will dictate the ultimate compensation for permanent or temporary impacts to waters of the U.S./waters of the State. RWQCB and USACE determinations, as well as proof of required permits, if any, shall be submitted to the City's Community Development Department for review.

3-7 *Prior to initiation of any ground disturbing activities affecting the bed, bank, or associated riparian vegetation along Robla Creek, a Notification pursuant to CDFW's Section 1602 shall be submitted to the CDFW. If required, the developer shall enter into a Streambed Alteration Agreement (SAA) with CDFW in developing appropriate mitigation, and shall abide by the conditions of the SAA, including appropriate BMPs to prevent construction-related impacts. A copy of the fully executed SAA shall be submitted to the City's Community Development Department.*

FINDINGS

All additional significant environmental effects of the project relating to Biological Resources can be mitigated to a less-than-significant level.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
4. CULTURAL RESOURCES Would the project: A) Cause a substantial adverse change in the significance of a historical or archaeological resource as defined in § 15064.5?		X	
B) Directly or indirectly destroy a unique paleontological resource?		X	
C) Disturb any human remains?		X	

ENVIRONMENTAL SETTING

The City of Sacramento and the surrounding area are known to have been occupied by Native American groups for thousands of years prior to settlement by non-Native peoples. Archaeological materials, including human burials, have been found throughout the City, some in deeply buried contexts. One of the tools used to identify the potential for cultural resources to be present in the project area is the 2035 General Plan Background Report. Generalized areas of high sensitivity for cultural resources are located within close proximity to the Sacramento and American Rivers and moderate sensitivity was identified near other watercourses. The proposed project site is not adjacent to these high or moderate sensitivity units shown in the 2035 General Plan Background Report. The 2035 General Plan land use diagram designates a wide swath of land along the American River as Parks, which limits development and impacts on sensitive cultural resources. High sensitivity areas may be found in other areas related to the ancient flows of the rivers, with differing meanders than found today. Recent discoveries during infill construction in downtown Sacramento have shown that the downtown area is highly sensitive for both historic period archaeological- and pre-contact indigenous resources. Native American burials and artifacts were found in 2005 during construction of the New City Hall and historic period archaeological resources are abundant downtown due to the evolving development of the area and, in part, to the raising of the surface street level in the 1860s and 1870s, which created basements out of the first floors of many buildings.

Currently, the project site is undeveloped and generally consists of ruderal grasses with trees scattered along the eastern and southern portions of the site. The project site has been subject to regular disking.

STANDARDS OF SIGNIFICANCE

For purposes of this Initial Study, cultural resource impacts may be considered significant if the proposed project would result in one or more of the following:

- Cause a substantial change in the significance of a historical or archaeological resource as defined in CEQA Guidelines Section 15064.5; or
- Directly or indirectly destroy a unique paleontological resource; or
- A substantial adverse change in the significance of such resources.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR evaluated the potential effects of development under the 2035 General Plan on prehistoric and historic resources. See Chapter 4.4.

General Plan policies identified as reducing such effects call for identification of resources on project sites (Policy HCR 2.1.1), implementation of applicable laws and regulations (Policy HCR 2.1.2), early

consultation with owners and land developers to minimize effects (Policy HCR 2.1.10) and encouragement of adaptive reuse of historic resources (Policy HCR 2.1.14). Demolition of historic resources is deemed a last resort. (Policy HCR 2.1.15)

The Master EIR concluded that implementation of the 2035 General Plan would have a significant and unavoidable effect on historic resources and archeological resources. (Impacts 4.4-1,2)

ANSWERS TO CHECKLIST QUESTIONS

Questions A through C

The approximately 20.40-acre project site is currently undeveloped. The proposed project would include development of 177 two-story single-unit residences, two public parks, detention basin in the northwest corner of the project site, associated on-site roadways and utilities, and a number of improvements to Rio Linda Boulevard primarily along the project frontage.

To identify any known cultural resources on the site, a Cultural Resources Assessment was performed by Peak & Associates, Inc. As part of the Cultural Resources Assessment, records of previously recorded cultural resources and cultural resource investigations were examined by the North Central Information Center (NCIC) of the California Historical Resources Information System (CHRIS) for the project area and a 0.25-mile radius. Prehistoric period sites are not reported within either the project area or the 0.25-mile radius record search area. Three historic period resources were identified, including a remnant of a pump station (P-34-640), a small section of a levee (P-3-643), and the Sacramento Northern Railroad route (P-34-746); however, all three resources are located outside of the project site boundaries. In addition, a field assessment was conducted on August 31, 2021 by Peak & Associates, Inc. Additional prehistoric and historic period cultural resources were not identified on-site during the field assessment.

Based on the results of the Cultural Resources Assessment and the disturbed nature of the project site, surface cultural resources are not likely to be found on-site during grading and construction activities. However, due to the predominant historic theme of the region as a whole, which includes thousands of years of occupation by Native American groups prior to non-Native peoples settling in the region, the possibility exists that previously unknown resources could be encountered during ground-disturbing activities associated with development of the project. Therefore, the proposed project would have a potentially significant impact related to damaging or destroying prehistoric cultural resources. However, with implementation of Mitigation Measure 4-1, the project would result in a ***less-than-significant impact with mitigation incorporated***.

MITIGATION MEASURES

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4-1 ***In the Event that Cultural Resources are Discovered During Construction, Implement Procedures to Evaluate Cultural Resources and Implement Avoidance and Minimization Measures to Avoid Significant Impact.***

If archaeological resources, or paleontological resources, are encountered in the project area during construction, the following performance standards shall be met prior to continuance of construction and associated activities that may result in damage to or destruction of cultural resources:

- *Each resource will be evaluated for California Register of Historical Resources (CRHR) eligibility through application of established eligibility criteria (California Code of Regulations 15064.636), in consultation with consulting Native American Tribes.*

If a cultural resource is determined to be eligible for listing on the CRHR, the City will avoid damaging effects to the resource in accordance with California PRC Section 21084.3, if feasible. If the City determines that the project may cause a significant impact to a cultural resource, and measures are not otherwise identified in the consultation process, the following are examples of mitigation capable of avoiding or substantially lessening potential significant impacts to a cultural resource or alternatives that would avoid significant impacts to the resource. These measures may be considered to avoid or minimize significant adverse impacts and constitute the standard by which an impact conclusion of less-than significant may be reached:

- *Avoid and preserve resources in place, including, but not limited to, planning construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.*
- *Treat the resource with culturally appropriate dignity taking into account the cultural values and meaning of the resource, including, but not limited to, the following:*
    - *Protect the cultural character and integrity of the resource.*
    - *Protect the traditional use of the resource.*
    - *Protect the confidentiality of the resource.*
    - *Establish permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or using the resources or places.*
    - *Rebury the resource in place.*
    - *Protect the resource.*

Avoidance and preservation in place is the preferred manner of mitigating impacts to archaeological resources and paleontological resources will be accomplished, if feasible, by several alternative means, including:

- *Planning construction to avoid cultural resources, archaeological sites and/ or other resources; incorporating sites within parks, green-space or other open space; covering archaeological sites; deeding a site to a permanent conservation easement; or other preservation and protection methods agreeable to consulting parties and regulatory authorities with jurisdiction over the activity.*
- *The construction contractor(s) will install and maintain protective fencing throughout construction to avoid the site during all remaining phases of construction. The area will be demarcated as an "Environmentally Sensitive Area".*

To implement these avoidance and minimization standards, the following procedures shall be followed in the event of the discovery of an archaeological or paleontological resource:

- *At the developer's expense, the City shall coordinate the investigation of the find with a qualified (meeting the Secretary of the Interior's Qualification Standards for Archaeology) archaeologist approved by the City. As part of the site investigation and resource assessment, the City and the archaeologist shall assess the significance of the find, make recommendations for further evaluation and treatment as necessary and provide proper management recommendations should potential impacts to the resources be determined by the City to be significant. A written report detailing the site assessment, coordination activities, and management recommendations shall be provided to the City representative by the qualified archaeologist. These recommendations will be documented in the project record.*
- *The City shall consider management recommendations for tribal cultural resources, including Native American archaeological resources, that are deemed appropriate, including resource avoidance or, where avoidance is infeasible in light of project design or layout or is unnecessary to avoid significant effects,*

preservation in place or other measures. The contractor shall implement any measures deemed by the City to be necessary and feasible to avoid or minimize significant impacts to the cultural resources.

FINDINGS

All additional significant environmental effects of the project relating to Cultural Resources can be mitigated to a less-than-significant level.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
5. ENERGY Would the project: A) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?			X
B) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X

ENVIRONMENTAL SETTING

The project site is within the service area of both the Sacramento Municipal Utility District (SMUD) and Pacific Gas and Electric Co. (PG&E). SMUD is a community-owned and not-for-profit utility that provides electric services to 900 square miles, including most of Sacramento County. PG&E is an investor-owned utility that provides electric and natural gas services to approximately 16 million people within a 70,000-square-mile service area in both northern and central California. SMUD is the primary electricity supplier, and PG&E is the primary natural gas supplier for the City of Sacramento and the project area.

Energy demand related to the proposed project would include energy directly consumed for space heating and cooling and proposed electric facilities and lighting. Indirect energy consumption would be associated with the generation of electricity at power plants. Transportation-related energy consumption includes the use of fuels and electricity to power cars, trucks, and public transportation. Energy would also be consumed by equipment and vehicles used during project construction and routine maintenance activities.

Energy Policy and Conservation Act, and CAFE Standards

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Under this act, the National Highway Traffic and Safety Administration is responsible for revising existing fuel economy standards and establishing new vehicle economy standards. The Corporate Average Fuel Economy program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Three Energy Policy Acts have been passed, in 1992, 2005, and 2007, to reduce dependence on foreign petroleum, provide tax incentives for alternative fuels, and support energy conservation.

Energy Policy Act of 1992 and 2005

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are also included in EPAct. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 is designed to improve vehicle fuel economy and help reduce U.S. dependence on oil. It represents a major step forward in expanding the production of renewable fuels, reducing dependence on oil, and confronting global climate change. The Energy Independence and Security Act of 2007 increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over current levels; and reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020—an increase in fuel economy standards of 40 percent.

By addressing renewable fuels and the CAFE standards, the Energy Independence and Security Act of 2007 builds upon progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century.

State of California Energy Efficiency Action Plan

The 2019 California Energy Efficiency Action Plan has three primary goals for the State: double energy efficiency savings by 2030 relative to a 2015 base year (per SB 350), expand energy efficiency in low-income and disadvantaged communities, and reduce GHG emissions from buildings. This plan provides guiding principles and recommendations on how the State would achieve those goals. These recommendations include:

- Identifying funding sources that support energy efficiency programs;
- Identifying opportunities to improve energy efficiency through data analysis;
- Using program designs as a way to encourage increased energy efficiency on the consumer end;
- Improving energy efficiency through workforce education and training; and
- Supporting rulemaking and programs that incorporate energy demand flexibility and building decarbonization.

California Green Building Standards Code

The 2019 California Green Building Standards Code, otherwise known as the CALGreen Code (CCR Title 24, Part 11) is a portion of the CBSC, which became effective on January 1, 2020. The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The CALGreen standards regulate the method of use, properties, performance, types of materials used in construction, alteration repair, improvement and rehabilitation of a structure or improvement to property. The provisions of the code apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout California. Requirements of the CALGreen Code include, but are not limited to, the following measures:

- Compliance with relevant regulations related to future installation of electric vehicle charging infrastructure in residential and non-residential structures;
- Indoor water use consumption is reduced through the establishment of maximum fixture water use rates;
- Outdoor landscaping must comply with the California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), or a local ordinance, whichever is more stringent, to reduce outdoor water use;
- Diversion of 65 percent of construction and demolition waste from landfills; and
- Mandatory use of low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board.

California Energy Code

The energy consumption of new residential and nonresidential buildings in California is regulated by the state's Title 24, Part 6, Building Energy Efficiency Standards (California Energy Code). The California Energy Code was established by the California Energy Commission (CEC) in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and non-residential buildings. CEC updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions.

The 2019 California Energy Code was adopted by CEC on May 9, 2018 and applies to projects constructed after January 1, 2020. The 2019 California Energy Code is designed to move the State closer to its zero-net energy goals for new residential development. It does so by requiring all new residences to install enough renewable energy to offset all the electricity needs of each residential unit (California Code of Regulations (CCR), Title 24, Part 6, Section 150.1[c]4). CEC estimates that the combination of mandatory on-site renewable energy and prescriptively required energy efficiency standards will result in a 53 percent reduction in new residential construction as compared to the 2016 California Energy Code. Non-residential buildings are anticipated to reduce energy consumption by 30 percent as compared to the 2016 California Energy Code primarily through prescriptive requirements for high-efficiency lighting. The California Energy Code is enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in the California Energy Code.

Transportation-Related Regulations

Various regulatory and planning efforts are aimed at reducing dependency on fossil fuels, increasing the use of alternative fuels, and improving California's vehicle fleet. SB 375 aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. CARB, in consultation with the metropolitan planning organizations, provides each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035.

Pursuant to AB 2076 (Chapter 936, Statutes of 2000), CEC and the CARB prepared and adopted a joint agency report in 2003, Reducing California's Petroleum Dependence. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT.

AB 1007 (Chapter 371, Statues of 2005) required CEC to prepare the State Alternative Fuels Plan to increase the use of alternative fuels in California.

In January 2012, CARB approved the Advanced Clean Cars program which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025.

On August 2, 2018, the National Highway Traffic Safety Administration (NHTSA) and EPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule). Part One of the SAFE Rule revokes a waiver granted by EPA to the State of California under Section 209 of the CAA to enforce more stringent emission standards for motor vehicles than those required by EPA for the explicit purpose of GHG emission reduction, and indirectly, criteria air pollutant and ozone precursor emission reduction. On March 31, 2020, Part Two of the SAFE Rule was published and would amend existing CAFE and tailpipe CO_2 emissions standards for passenger cars and light trucks and establish new standards covering model years 2021 through 2026.

GHG Reduction Regulations

Several regulatory measures such as AB 32 and the Climate Change Scoping Plan, EO B-30-15, SB 32, and AB 197 were enacted to reduce GHG emissions and have the co-benefit of reducing California's dependency on fossil fuels and making land use development and transportation systems more energy efficient.

Renewable Energy Regulations

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond.

SB 100, signed in September 2018, requires that all California utilities, including independently-owned utilities, energy service providers, and community choice aggregators, supply 44 percent of retail sales from renewable resources by December 31, 2024, 50 percent of all electricity sold by December 31, 2026, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. The law also requires that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 is designed to improve vehicle fuel economy and help reduce U.S. dependence on oil. It represents a major step forward in expanding the production of renewable fuels, reducing dependence on oil, and confronting global climate change. The Energy Independence and Security Act of 2007 increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over current levels; and reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020—an increase in fuel economy standards of 40 percent.

By addressing renewable fuels and the CAFE standards, the Energy Independence and Security Act of 2007 builds upon progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

Structures built as part of buildout of the General Plan would be subject to Titles 20 and 24 of the CCR, which reduce demand for electrical energy by implementing energy-efficient standards for residential and non-residential buildings. The 2035 General Plan includes policies (see 2035 General Plan Energy Resources Goal U 6.1.1 and related policies) to encourage energy-efficient technology by offering rebates and other incentives to commercial and residential developers, coordination with local utility providers, and recruitment of businesses that research and promote energy conservation and efficiency.

The Master EIR discussed energy conservation and relevant General Plan policies in Section 6.3 (page 6-3). The discussion concluded that with implementation of the General Plan policies and energy regulation (e.g., Title 24) development allowed in the General Plan would not result in the inefficient, wasteful or unnecessary consumption of energy.

The Master EIR concluded that implementation of State regulations, coordination with energy providers, and implementation of General Plan policies would reduce the potential impacts from construction of new energy production or transmission facilities to a less-than-significant level.

Sacramento Climate Action Plan

The Sacramento CAP was adopted on February 14, 2012 by the Sacramento City Council and was incorporated into the 2035 General Plan. The Sacramento CAP includes GHG emission reduction targets, strategies, and implementation measures developed to help the City reach these targets. Reduction strategies address GHG emissions associated with transportation and land use, energy, water, waste management and recycling, agriculture, and open space.

STANDARDS OF SIGNIFICANCE

For the purposes of this IS/MND, an impact is considered significant if the proposed project would:

- Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation; and/or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

ANSWERS TO CHECKLIST QUESTIONS

Questions A and B

Neither federal or State law nor the State CEQA Guidelines establish thresholds that define when energy consumption is considered wasteful, inefficient, and unnecessary. Compliance with CCR Title 24 Building Energy Efficiency Standards would result in energy-efficient buildings. However, compliance with building codes does not adequately address all potential energy impacts during construction and operation. For example, energy would be required to transport people and goods to and from the project site. Energy use is discussed by anticipated use type below.

Construction

Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the sites where energy supply cannot be met through a hookup to the existing electricity grid.

Even during the most intense period of construction, due to the different types of construction activities (e.g., site preparation, grading, building construction), only portions of the project site would be disturbed at a time, with operation of construction equipment occurring at different locations on the project site, rather than a single location. In addition, all construction equipment and operation thereof would be regulated per the CARB In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. The In-Use Off-Road Diesel Vehicle Regulation would subsequently help to improve fuel efficiency and reduce GHG emissions. Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to reduce demand on oil and emissions associated with construction.

The CARB prepared the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan), which builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. Appendix B of the 2017 Scoping Plan includes examples of local actions (municipal code changes, zoning changes, policy directions, and mitigation measures) that would support the State's climate goals. The examples provided include, but are not limited to, enforcing idling time restrictions for construction vehicles, utilizing existing grid power for electric energy rather than operating temporary gasoline/diesel-powered generators, and increasing use of electric and renewable

fuel-powered construction equipment. The CARB Diesel Vehicle Regulation described above, with which the project must comply, would be consistent with the intention of the 2017 Scoping Plan and the recommended actions included in Appendix B of the 2017 Scoping Plan.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, construction activities would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand.

Operational

The proposed project would be subject to all relevant provisions of the most recent update of the CBSC, including the California Energy Code. Adherence to the most recent CALGreen Code, the California Energy Code, and all applicable regulations included within the City's CAP would ensure that the proposed structures would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. Required compliance with the CBSC would ensure that the building energy use associated with the project would not be wasteful, inefficient, or unnecessary. In addition, electricity supplied to the project site by SMUD would comply with the State's Renewables Portfolio Standard, which requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 60 percent by 2030. Pursuant to the 2019 CBSC, the proposed project would be required to incorporate rooftop solar panels to meet the electricity demands of future residents. As a result, a portion of the electricity consumed during project operations would be generated from renewable sources.

With regard to transportation energy use, the proposed project would comply with all applicable regulations associated with vehicle efficiency and fuel economy.

Conclusion

Based on the above, construction and operation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Thus, implementation of the proposed project would have a ***less-than-significant*** impact related to energy.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Energy.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
6. GEOLOGY AND SOILS Would the project: A) Would the project allow a project to be built that will either introduce geologic or seismic hazards by allowing the construction of the project on such a site without protection against those hazards?		X	

ENVIRONMENTAL SETTING

Seismicity

The City of Sacramento is not located within an Alquist-Priolo Earthquake Fault Zone, and known faults do not exist within the Policy Area. Therefore, fault rupture within the Policy Area is highly unlikely and, consequently, implementation of buildout of the General Plan would not expose people or structures to the possibility of fault rupture.

Nonetheless, the City may be subject to seismic hazards caused by major seismic events outside the City. Per the Master EIR, the greatest earthquake threat to the City comes from earthquakes along Northern California's major faults, including the San Andreas, Calaveras, and Hayward faults. Ground shaking on any of the aforementioned faults could cause shaking within the City to an intensity of five to six moment magnitude (Mw). However, as noted above, the City is not within an Alquist-Priolo Earthquake Fault Zone and does not include any known active faults. As such, the City's seismic ground-shaking hazard is low, ranking among the lowest in the State. Additionally, the City is in Seismic Zone 3. Accordingly, any future development, rehabilitation, reuse, or possible change of use of a structure would be required to comply with all design standards applicable to Seismic Zone 3.

Topography

Terrain in the City of Sacramento features very little relief and the potential for slope instability within the City is minor due to the relatively flat topography of the area. The topography of the project site is relatively level, and is not a risk of seismically-induced landslides. Therefore, the potential for slope instability at the project site is minor.

Regional Geology

The City of Sacramento is located in the Great Valley Geomorphic Province. The Great Valley Geomorphic Province consists of a deep, northwest-trending sedimentary basin that borders the east of the Coast Ranges. The Great Valley Geomorphic Province is a flat alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California. The northern portion of the Great Valley Geomorphic Province is the Sacramento Valley drained by the Sacramento River, and the southern part is the San Joaquin Valley drained by the San Joaquin River. The valley is surrounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, Coastal Range to the west, and Cascade Range to the north.

STANDARDS OF SIGNIFICANCE

For the purposes of this Initial Study, an impact is considered significant if it allows a project to be built that will either introduce geologic or seismic hazards by allowing the construction of the project on such a site without protection against those hazards.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

Chapter 4.5 of the Master EIR evaluated the potential effects related to seismic hazards, underlying soil characteristics, slope stability, erosion, existing mineral resources and paleontological resources in the City. Implementation of identified policies in the 2035 General Plan reduced all effects to a less-than-significant level. Policy EC 1.1.1 requires regular review of the City's seismic and geologic safety standards, and Policy EC 1.1.2 requires geotechnical investigations for project sites to identify and respond to geologic hazards, when present.

ANSWERS TO CHECKLIST QUESTIONS

Question A

The City of Sacramento's topography is relatively flat, the City is not located within an Alquist-Priolo Earthquake Fault Zone, and the City is not located in the immediate vicinity of an active fault. However, Sacramento is located in a moderate seismically-active region. The 2035 General Plan indicates that ground shaking would occur periodically in Sacramento as a result of distant earthquakes. The 2035 General Plan further states that the earthquake resistance of any building is dependent on an interaction of seismic frequency, intensity, and duration with the structure's height, condition, and construction materials. Although the project site is not located near any active or potentially active faults, strong ground shaking could occur at the project site during a major earthquake on any of the major regional faults.

The proposed project would include the development of 177 two-story single-unit residences and two public parks, as well as a retention basin in the northwest corner of the project site. Due to the seismic activity in the State, construction is required to comply with Title 24 of the Uniform Building Code (UBC). Chapter 15.20 of the Sacramento City Code adopts the UBC and mandates compliance; therefore, all new construction and modifications to existing structures within the City are subject to the requirements of the UBC. The UBC contains standards to ensure that all structures and infrastructure are constructed to minimize the impacts from seismic activity, to the extent feasible, including exposure of people or structures to substantial, adverse effects as a result of strong groundshaking, seismic-related ground failure, liquefaction, lateral spreading, landslides, or lurch cracking. As a result, seismic activity in the area of the proposed development would not expose people or structures to substantial, adverse effects as a result of strong groundshaking and seismic-related ground failure.

In addition, issues related to fault rupture, seismic groundshaking, and seismically induced ground failures are addressed in the City's adopted Standard Specifications for Public Works Construction (2007), which requires construction contractors to build to City standards related to structural integrity, thus, ensuring that erosion and unstable soil conditions do not occur as a result of construction. The construction specification document contains provisions that require contractors to be responsible for damage caused during construction and to be responsible for the repair of such damages (e.g., settling of adjacent land and structures). The proposed project would require construction, and individual components used in the construction of the project would be constructed to industry-provided design specifications and requirements, including the American Society for Testing and Materials (ASTM) standards.

Soils typically found most susceptible to liquefaction are saturated and loose, fine to medium grained sand. Liquefaction occurs where surface soils become saturated with water and become mobile during groundshaking caused by a seismic event. When soils subject to liquefaction move, the foundations of structures move as well which can cause structural damage. Liquefaction generally occurs below the water table, but could move upward through soils after development. The Master EIR identified soils subject to liquefaction to be found within areas primarily within the Central City, Pocket, and North and South Natomas Community. However, the Master EIR recommends using site-specific geotechnical studies to determine if in fact, a specific location may be subject to liquefaction hazard.

A Geotechnical Exploration was conducted for the project site by ENGEO, Incorporated (see Appendix E).[18] As part of the report, ENGEO, Incorporated performed a site reconnaissance and drilled four exploratory test borings of subsurface soils at the project site. The soils encountered were variable across the site but generally consisted of varying mixtures of clay and silt with occasional thin lenses of silty sand to sandy silt to the maximum depth explored of 20 feet. The description is consistent with the alluvial nature of the soil deposits at the site. All materials encountered were at least dense/stiff in consistency. The surficial soil generally has a moderate to high expansion potential. Groundwater was not encountered within the borings. Based on review of the historical data for a local well, as published on the State of California Department of Water Resources website, the groundwater in the area is approximately 40 feet below the existing ground surface. Fluctuations in groundwater levels are expected to occur seasonally in response to changes in precipitation, irrigation, and other factors not evident at the time of the exploration.

Based on the 2005 Geotechnical Exploration, the site is feasible for construction given that recommendations presented in the report are incorporated in the project design. Due to the depth of groundwater on the project site, the dense nature of the soils, and low level of groundshaking, the Geotechnical Exploration determined the potential for liquefaction, densification, and lateral spreading to be low. Furthermore, development of the project site would be built to City of Sacramento Building Code, UBC Standards, and California Building Code Standards.

As such, the proposed project would not introduce geologic or seismic hazards by allowing the construction of the project on the site without protection against those hazards. With implementation of Mitigation Measure 6-1, the project would result in a ***less-than-significant impact with mitigation incorporated***.

MITIGATION MEASURES

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

6-1 *Prior to issuance of a grading permit, the grading plans shall incorporate the geotechnical recommendations specified in the Geotechnical Exploration prepared for the proposed project, as agreed upon by City Building Division staff. All grading and foundation plans for the development must be reviewed and approved by the City Engineer and Chief Building Official, or their representative(s), prior to issuance of grading and building permits in order to ensure that recommendations in the Geotechnical Exploration are properly incorporated and utilized in the project design.*

FINDINGS

All additional significant environmental effects of the project relating to Geology and Soils can be mitigated to a less-than-significant level.

[18] ENGEO Incorporated. *Geotechnical Exploration, Shehadeh Property, Sacramento, California.* December 17, 2005. Revised March 30, 2006.

Issues:	Effect will be studied in the EIR	Effect can be mitigated to less than significant	No additional significant environmental effect
7. GREENHOUSE GAS EMISSIONS Would the project: A) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			
B) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			

Environmental Setting

The City of Sacramento is located within the Sacramento Valley Air Basin (SVAB), which is a valley bounded by the North Coast Mountain Ranges to the west and the Northern Sierra Nevada Mountains to the east. The terrain in the valley is flat and approximately 25 feet above sea level.

Hot, dry summers and mild, rainy winters characterize the Mediterranean climate of the Sacramento Valley. Throughout the year, daily temperatures may range by 20 degrees Fahrenheit with summer highs often exceeding 100 degrees and winter lows occasionally below freezing. Average annual rainfall is about 20 inches and snowfall is very rare. Summertime temperatures are normally moderated by the presence of the "Delta breeze" that arrives through the Carquinez Strait in the evening hours.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants in the valley. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions that trap cooler air and pollutants near the ground.

The warmer months in the SVAB (May through October) are characterized by stagnant morning air or light winds, and the Delta breeze that arrives in the evening out of the southwest. Usually, the evening breeze transports a portion of airborne pollutants to the north and out of the Sacramento Valley. During about half of the day from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern to circle back south. This phenomenon exacerbates the pollution levels in the area and increases the likelihood of violating Federal or State standards. The Schultz Eddy normally dissipates around noon when the Delta breeze begins.

Greenhouse Gases

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. GHGs are responsible for "trapping" solar radiation in the earth's atmosphere, a phenomenon known as the greenhouse effect. Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. Emissions of GHGs contributing to global climate change are attributable, in large part, to human activities associated with on-road and off-road transportation, industrial/manufacturing, electricity generation by utilities and

consumption by end users, residential and commercial on-site fuel usage, and agriculture and forestry. Emissions of CO_2 are, largely, byproducts of fossil fuel combustion.

The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is enormous. No single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

Several regulations currently exist related to GHG emissions, predominantly Assembly Bill (AB) 32, Executive Order S-3-05, and Senate Bill (SB) 32. AB 32 requires that Statewide GHG emissions be reduced to 1990 levels by 2020. Executive Order S-3-05 established the GHG emission reduction target for the State to reduce to the 2000 level by 2010, the 1990 level by 2020 (AB 32), 40 percent below the 1990 level by 2030, and to 80 percent below the 1990 level by 2050 (SB 32).

To meet the statewide GHG emission targets, the City adopted the City of Sacramento Climate Action Plan (CAP) on February 14, 2012 to comply with AB 32. The CAP identified how the City and the broader community could reduce Sacramento's GHG emissions and included reduction targets, strategies, and specific actions. In 2015, the City of Sacramento adopted the 2035 General Plan Update. The update incorporated measures and actions from the CAP into Appendix B, General Plan CAP Policies and Programs, which includes citywide policies and programs that are supportive of reducing GHG emissions

STANDARDS OF SIGNIFICANCE

- A project is considered to have a significant effect relating to greenhouse gas emissions if it fails to satisfy the requirements of the City's Climate Action Plan.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR found that greenhouse gas emissions that would be generated by development consistent with the 2035 General Plan would contribute to climate change on a cumulative basis. Policies of the General Plan identified in the Master EIR that would reduce construction related GHG emissions include: ER 6.1.2, ER 6.1.11 requiring coordination with SMAQMD to ensure feasible mitigation measures are incorporated to reduce GHG emissions, and ER 6.1.15. The 2035 General Plan incorporates the GHG reduction strategy of the 2012 Climate Action Plan (CAP), which demonstrates compliance mechanism for achieving the City's adopted GHG reduction target of 15 percent below 2005 emissions by 2020. Policy ER 6.1.8 commits the City to assess and monitor performance of GHG emission reduction efforts beyond 2020, and progress toward meeting long-term GHG emission reduction goals, ER 6.1.9 also commits the City to evaluate the feasibility and effectiveness of new GHG emissions reduction measures in view of the City's longer-term GHG emission reductions goal.The discussion of greenhouse gas emissions and climate change in the 2035 General Plan Master EIR are incorporated by reference in this Initial Study. (CEQA Guidelines Section 15150)

The Master EIR identified numerous policies included in the 2035 General Plan that addressed greenhouse gas emissions and climate change. See Draft Master EIR, Chapter 4.14, and pages 4.14-1 et seq. The Master EIR is available for review online at
http://www.cityofsacramento.org/Community-Development/Planning/Environmental/Impact-Reports

ANSWERS TO CHECKLIST QUESTIONS

Questions A and B

Maximum annual GHG emissions from construction and operations of the proposed project were quantified and would equal approximately 691 metric tons of CO_2 equivalent units per year ($MTCO_2e$/yr) and 1,808.21 $MTCO_2e$/yr, respectively. For construction-related GHG emissions, SMAQMD has adopted a threshold of significance of 1,100 $MTCO_2e$/yr. Construction of the proposed project would not exceed this threshold. For evaluating operational GHG emissions, SMAQMD has prepared a two-tiered framework of analysis for new projects. All development projects are required to implement Tier 1 measures (BMP 1 and 2). BMP 1

requires that projects shall be designed without natural gas infrastructure, and BMP 2 requires that projects shall include electric vehicle-ready (EV) parking spaces. Then, if operations of the proposed project would exceed 1,100 $MTCO_2e$/yr after implementation of the Tier 1 measures, then the project is required to implement Tier 2 measures (BMP 3). BMP 3 mandates that residential projects shall achieve a 15 percent reduction in VMT per resident as compared to the existing average VMT for the County.

In addition, the City of Sacramento has integrated a CAP into the City's General Plan. Thus, potential impacts related to climate change from development within the City are also assessed based on the project's compliance with the City's adopted General Plan CAP Policies and Programs set forth in Appendix B of the General Plan Update. The majority of the policies and programs set forth in Appendix B are citywide efforts in support of reducing overall citywide emissions of GHG. However, various policies related to new development within the City would directly apply to the proposed project.

The project's compliance with SMAQMD thresholds, as well as the project's general consistency with City policies that would reduce GHG emissions from buildout of the City's General Plan are discussed below.

SMAQMD Threshold Compliance

The proposed project would be required to meet the following BMPs, regardless of emissions:

- **BMP 1:** No natural gas: Projects shall be designed and constructed without natural gas infrastructure.
- **BMP 2:** Electric vehicle (EV) ready: Projects shall meet the current CALGreen Tier 2 standards, except all EV Capable spaces shall instead be EV Ready.

In addition, projects with operational emissions that exceed 1,100 $MTCO_2e$/yr after implementation of BMP 1 and BMP 2, are required to implement Tier 2 measures (BMP 3) as follows:

- **BMP 3:** Residential projects shall achieve a 15 percent reduction in VMT per resident as compared to the existing average VMT for the County.

As discussed above, maximum annual GHG emissions from operations of the proposed project were quantified and would equal approximately 1,808.21 $MTCO_2e$/yr. In order to be consistent with BMP 1, the proposed project is required to include all electric appliances and plumbing. Based on project-specific information, the proposed project would not include the use of natural gas.[19]

Regarding BMP 2, the 2019 CALGreen Code requires all single-family residences, townhomes, and duplexes be EV capable (i.e., each dwelling unit must have a listed raceway to accommodate a dedicated 208/40-volt branch circuit), which would be suitable for EV charging. However, compliance with the 2019 CALGreen Code would not satisfy the requirements established by SMAQMD BMP 2, as BMP 2 requires spaces to be EV Ready. Even with implementation of BMP 2, emissions are anticipated to still be above the 1,100 $MTCO_2e$/yr and, as a result, the proposed project would be required to comply with BMP 3.

With respect to the BMP 3, as discussed in Section 13, Transportation and Circulation, of this IS/MND, with consideration of the proposed project's increase in density and planned commercial uses in the vicinity, the proposed project's VMT per capita would not exceed 85 percent of the regional average.

Based on the above, while the proposed project would comply with SMAQMD BMP 1 and BMP 3, the proposed project does not include the necessary infrastructure to meet the requirements of BMP 2. Therefore, Mitigation Measure 7-1 would be required to ensure compliance with BMP 2.

CAP Consistency

Goal LU 1.1 and Policy LU 1.1.5 encourage infill development within existing urbanized areas. Given that the areas to the east and south of the project site are generally built out, the project would be consistent

[19] Robertson, Mike, Baker Williams Engineering. Personal Communication [email] with Marco Gabbiani, Swift Developments. July 11, 2022.

with Goal LU 1.1 and Policy LU 1.1.5. Given the development of a park, along with the associated tot lot, and the connection to the nearby bike trail on the project site, the project would also be consistent with Policy LU 2.3.1 and Goal LU 9.1, which dictate that the City shall strive to create an integrated system of parks and open space that frames the City's urbanized areas, and also protect open space for recreational purposes. As such, the proposed project would also be consistent with Policies LU 4.1.3, LU 4.1.10, and LU 4.2.1, which encourage family-friendly neighborhoods with pedestrian and cyclist accessibility. The proposed project would be constructed in compliance with the California Building Standards Code (CBSC), which includes the California Building Energy Efficiency Standards and the California Green Building Code. The CBSC, and the foregoing standards and codes, increase the sustainability of new development through requiring energy efficiency and sustainable design practices (Policy ER 6.1.7). Such sustainable design would support the City's Policy U 6.1.5, which states that energy consumption per capita should be reduced as compared to the year 2005. In addition, the proposed land use designation would provide that the project site is developed with more units per acre than was anticipated in the 2035 General Plan, and thus would be consistent with Policies LU 2.6.1 and LU 2.6.6, which encourage sustainable and efficient development through higher density.

Goal LU 2.5, Policy LU 2.5.1, and Policy LU 2.7.6 require that new urban developments should be well-connected, minimize barriers between uses, and create pedestrian-scaled, walkable areas. The proposed project would improve pedestrian and bicycle access through the addition of trails from the project site to the Sacramento Northern Bike Trail. In addition, the project would include the construction of on-site trails connecting the residences to the on-site park and the bike path. Furthermore, the project would include the construction of a bicycle lane and planter sidewalk on Rio Linda Boulevard along the project site's frontage, as well as sidewalks along the internal roadways. Given the proposed bike and pedestrian improvements, the proposed project would comply with the aforementioned goals and policies.

The Master EIR concluded that buildout of the City's General Plan, including the project site, would not result in a conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. The proposed project would be generally consistent with the City's residential General Plan land use designation for the site as well as the policies discussed above that are intended to reduce GHG emissions from buildout of the City's General Plan. Thus, GHG emissions from operation of the proposed project would be generally similar to what was previously analyzed in the Master EIR, and would be consistent with the CAP.

Conclusion

Based on the above, the proposed project would comply with SMAQMD BMP 1 and BMP 3. In addition, the project would be consistent with the City's CAP, and generally consistent with the City's General Plan policies intended to reduce GHG emissions. However, the proposed project does not include the necessary infrastructure to meet the requirements of BMP 2. Therefore, Mitigation Measure 7-1 would be required to ensure compliance with BMP 2. Without compliance with Mitigation Measure 7-1, the proposed project could result in a ***potentially significant*** impact.

MITIGATION MEASURES

7-1 The following requirements shall be noted on project improvement plans, subject to review and approval by the City of Sacramento Community Development Department:

- *Each dwelling unit shall be constructed to include an electric vehicle (EV) ready parking space, consistent with SMAQMD BMP 2 Standards.*

FINDINGS

All additional significant environmental effects of the project relating to Greenhouse Gas Emissions can be mitigated to a less-than-significant level.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
8. HAZARDS Would the project: A) Expose people (e.g., residents, pedestrians, construction workers) to existing contaminated soil during construction activities?			X
B) Expose people (e.g., residents, pedestrians, construction workers) to asbestos-containing materials or other hazardous materials?			X
C) Expose people (e.g., residents, pedestrians, construction workers) to existing contaminated groundwater during dewatering activities?			X

ENVIRONMENTAL AND REGULATORY SETTING

Federal regulations and regulations adopted by the SMAQMD apply to the identification and treatment of hazardous materials during demolition and construction activities. Failure to comply with these regulations respecting asbestos may result in a Notice of Violation being issued by the AQMD and civil penalties under state and/or federal law, in addition to possible action by U.S. EPA under federal law.

Federal law covers a number of different activities involving asbestos, including demolition and renovation of structures (40 CFR § 61.145).

SMAQMD Rule 902 and Commercial Structures

The work practices and administrative requirements of Rule 902 apply to all commercial renovations and demolitions where the amount of Regulated Asbestos-Containing Material (RACM) is greater than:

- 260 lineal feet of RACM on pipes, or
- 160 square feet of RACM on other facility components, or
- 35 cubic feet of RACM that could not be measured otherwise.

The administrative requirements of Rule 902 apply to any demolition of commercial structures, regardless of the amount of RACM. To determine the amount of RACM in a structure, Rule 902 requires that a survey be conducted prior to demolition or renovation unless:

- The structure is otherwise exempt from the rule, or
- Any material that has a propensity to contain asbestos (so-called "suspect material") is treated as if it is RACM.

Surveys must be done by a licensed asbestos consultant and require laboratory analysis. Asbestos consultants are listed in the phone book under "Asbestos Consultants." Large industrial facilities may use non-licensed employees if those employees are trained by the U.S. EPA. Questions regarding the use of non-licensed employees should be directed to the AQMD.

A Phase I Environmental Assessment (EA) was prepared for the proposed project by Lush Geosciences Incorporated in January 2020 (see Appendix F).[20] The Phase I EA included a review of previous land uses and history of the subject property, databases for records of known storage tanks sites or hazardous

[20] Lush Geosciences Incorporated. *Phase I Environmental Assessment Robla Village Property*. January 16, 2020.

materials, and available information from federal, State, or local agency lists of potentially hazardous wastes or materials on site. In addition, a site reconnaissance was conducted in January 2020. The purpose of the site reconnaissance was to examine the subject property for obvious physical indications of improper hazardous substances or evidence of petrochemical disposal, such as stained soil, stressed vegetation, sumps, partially buried drums, bulk underground and above-ground fuel storage tanks, and other obvious signs of hazardous materials involvement.

STANDARDS OF SIGNIFICANCE

For the purposes of this Initial Study, an impact is considered significant if the proposed project would:

- Expose people (e.g., residents, pedestrians, construction workers) to existing contaminated soil during construction activities;
- Expose people (e.g., residents, pedestrians, construction workers) to asbestos-containing materials or other hazardous materials; or
- Expose people (e.g., residents, pedestrians, construction workers) to existing contaminated groundwater during dewatering activities.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR evaluated effects of development on hazardous materials, emergency response and aircraft crash hazards. See Chapter 4.6. Implementation of the General Plan may result in the exposure of people to hazards and hazardous materials during construction activities, and exposure of people to hazards and hazardous materials during the life of the General Plan. Impacts identified related to construction activities and operations were found to be less than significant. Policies included in the 2035 General Plan, including PHS 3.1.1 (investigation of sites for contamination) and PHS 3.1.2 (preparation of hazardous materials actions plans when appropriate) were effective in reducing the identified impacts.

ANSWERS TO CHECKLIST QUESTIONS

Question A

According to the Master EIR, grading, excavation, and dewatering of sites for new development may expose construction workers and the public to known or previously unreported hazardous substances present in the soil or groundwater. If new development is proposed at or near a documented or suspected hazardous materials site, investigation, remediation, and cleanup of the site would be required before construction could begin. The Phase I EA prepared for the proposed project analyzed the project site for Recognized Environmental Concerns (RECs) that may affect future users of the site. RECs refer to the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products in structures on the property or into the ground, groundwater, or surface water of the property. According to the Phase I EA, RECs were not identified on or in the immediate vicinity of the subject property that would likely pose a significant impact. The field exploration did not reveal distressed vegetation, indications of underground tanks, or any signs of soil contamination. In addition, a search of the data available from regulatory agencies did not reveal any records of underground storage tanks or gas contamination on the project site. Furthermore, the project site is not located on a hazardous waste facility or site with known contamination within the EnviroStor Database.[21] The closest listed hazardous site is the McClellan Business Park, approximately 2.6 miles southeast of the project site. According to the Phase I EA, additional subsurface hazardous materials investigations of the project site are not required.

Because the proposed project does not contain contaminated soils, and off-site hazardous sites would not impact the project site, impacts related to exposing people to existing contaminated soils or groundwater during construction activities would be less-than-significant. Thus, implementation of the proposed project

[21] Department of Toxic Substances Control. *EnviroStor*. Available at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Natomas%2C+California. Accessed January 2022.

would result in a ***less-than-significant*** impact related to exposing people to existing contaminated soil during construction activities.

Question B

Asbestos is the name for a group of naturally occurring silicate minerals that are considered to be "fibrous" and, through processing, can be separated into smaller and smaller fibers. The fibers are strong, durable, chemical resistant, and resistant to heat and fire. The fibers are also long, thin, and flexible, so the fibers can even be woven into cloth. Because of such qualities, asbestos was considered an ideal product and has been used in thousands of consumer, industrial, maritime, automotive, scientific and building products. However, later discoveries found that, when inhaled, the material caused serious illness.

For buildings constructed prior to 1980, the Code of Federal Regulations (29 CFR 1926.1101) states that all thermal system insulation (boiler insulation, pipe lagging, and related materials) and surface materials must be designated as "presumed asbestos-containing material" unless proven otherwise through sampling in accordance with the standards of the Asbestos Hazard Emergency Response Act. Asbestos-containing materials could include, but are not limited to, plaster, ceiling tiles, thermal systems insulation, floor tiles, vinyl sheet flooring, adhesives, and roofing materials.

Lead-based paint (LBP) is defined as any paint, varnish, stain, or other applied coating that has one milligram per cubic centimeter or greater (5,000 micrograms per gram or 5,000 parts per million) of lead by federal guidelines. Lead is a highly toxic material that may cause a range of serious illnesses and, in some cases, death. In buildings constructed after 1978, LBP is unlikely to be present. Structures built prior to 1978 and especially prior to the 1960s should be expected to contain LBP.

The project site is currently undeveloped and has historically been used for agricultural purposes. Structures were present at the project site from 1937 to approximately 1993. However, given that these structures were demolished in 1993, and the site has been vacant since that time, asbestos and LBP are unlikely to be present at the project site, and the proposed development would not result in exposure to such hazards.

In addition, the project site is not in an area identified as likely to contain naturally-occurring asbestos (NOA). Thus, receptors would not be exposed to NOA as a result of ground-disturbing activities associated with implementation of the proposed project.

Based on the above, implementation of the proposed project would result in a ***less-than-significant*** impact related to exposing people to asbestos-containing materials or other hazardous materials.

Question C

According to the Geotechnical Exploration Report, groundwater levels encountered at the site were approximately 40 feet below the ground surface. Fluctuations in the groundwater level could occur with variations in seasonal rainfall, subsurface stratification, and irrigation on the site and vicinity. Construction activities are not expected to involve excavation to groundwater depths. Thus, groundwater dewatering is not anticipated to be required during development of the proposed project. Furthermore, according to the Phase I EA, groundwater on the project site has not been contaminated. Therefore, impacts related to exposing people to existing contaminated groundwater during dewatering activities would be less than significant, and construction of the proposed project would result in a ***less-than-significant*** impact related to groundwater contamination.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Hazards.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
9. HYDROLOGY AND WATER QUALITY Would the project: A) Substantially degrade water quality and violate any water quality objectives set by the State Water Resources Control Board, due to increases in sediments and other contaminants generated by construction and/or development of the project?			X
B) Substantially increase the exposure of people and/or property to the risk of injury and damage in the event of a 100-year flood?			X

ENVIRONMENTAL SETTING

The project site is located in a moderately developed area of North Sacramento. The site is currently undeveloped and consists primarily of ruderal grassland. Robla Creek lies across an access road and levee to the north, and three seasonal wetlands occur on the project site.

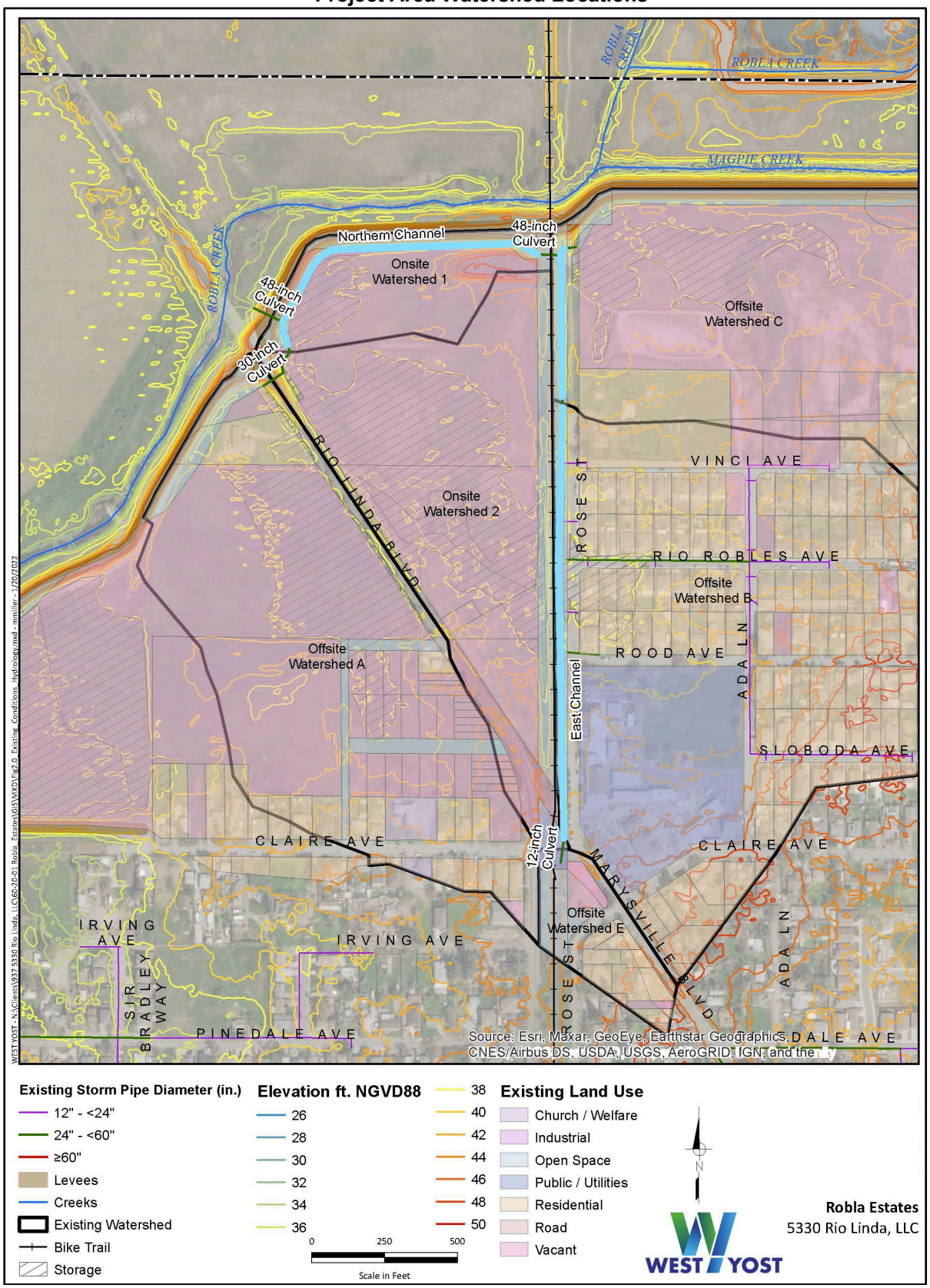
A Preliminary Basin Sizing Memorandum (see Appendix I) was prepared for the proposed project by West Yost[22] to characterize the existing drainage shed of the project area, and ensure that the proposed detention basin and pump station are sized accordingly. The existing drainage shed for the project area includes two on-site watersheds (On-site Watersheds 1 and 2) and five off-site watersheds (Off-site Watersheds A through E) (see Figure 11). A site visit was conducted on October 29, 2020 to document the culvert locations and existing off-site and on-site flow patterns. The following flow paths and infrastructure were observed on the site and listed by watershed:

- **Off-site Watershed A** drains northeast to a 30-inch reinforced concrete pipe (RCP) culvert where the pipe enters the project site and is discharged through a 48-inch RCP culvert under the levee to Robla Creek.
- **Off-site Watershed B** drains to the west through the City storm drain system and is discharged to the East Channel. The East Channel is relatively flat, with a slight slope north to a 48-inch RCP culvert where flow enters the project site. The 48-inch RCP culvert flows to the Northern Channel for discharge to Robla Creek through a 48-inch RCP culvert with flap gate. Flow can also exit the East Channel through a 36-inch RCP culvert with flap gate west of Rio Robles Avenue, which discharges to On-site Watershed 2.
- **Off-site Watershed C** drains to the northwest and enters the Robla Estates site by a 48-inch RCP culvert under the Bike Trail.
- **Off-site Watershed D** was delineated west of Offsite Watershed A, but was found not to contribute to flows at Robla Estate. Offsite Watershed D is omitted from discussion and figures.
- **Off-site Watershed E** drains north to a 12-inch RCP culvert then flows north in the East Channel.
- **On-site Watershed 1** flows northwest to the Northern Channel where lows are discharged through a 48-inch RCP culvert through the levee to Robla Creek.
- **On-site Watershed 2** flows northwest through a series of shallow depressions to the same 48-inch RCP culvert as Watershed 1 through the levee and discharges to Robla Creek.

The City of Sacramento's Grading Ordinance requires that development projects comply with the requirements of the City's Stormwater Quality Improvement Plan (SQIP). The SQIP outlines the priorities, key elements, strategies, and evaluation methods of the City's Stormwater Management Program.

[22] West Yost. *Robla Estates Preliminary Basin Sizing Technical Memorandum*. March 31, 2022.

Figure 11
Project Area Watershed Locations



The City's Stormwater Management Program is based on the National Pollutant Discharge Elimination System (NPDES) municipal stormwater discharge permit. The comprehensive Stormwater Management Program includes pollution reduction activities for construction sites, industrial sites, illegal discharges and illicit connections, new development, and municipal operations. In addition, before the onset of any construction activities, where the disturbed area is one acre or more in size, projects are required to obtain coverage under the NPDES General Construction Permit and include erosion and sediment control plans. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater and other non-point source runoff. Measures that reduce or eliminate post-construction-related water quality problems range from source controls, such as reduced surface disturbance, to treatment of polluted runoff, such as detention or retention basins. The City's SQIP and the *Stormwater Quality Design Manual for the Sacramento Region* (Sacramento Stormwater Quality Partnership 2014) include BMPs to be implemented to mitigate impacts from new development and redevelopment projects, as well as requirements for low impact development (LID) standards.

The Federal Emergency Management Agency (FEMA) publishes Flood Insurance Rate Maps (FIRM) that delineate flood hazard zones for communities. A large majority of project site is located within an area designated as Zone AE, which is applied to areas that are subject to inundation by the one percent annual chance flood event. According to FEMA, such areas are areas of special flood hazard where base flood elevations are shown as derived from detailed hydraulic analyses. Mandatory flood insurance requirements and floodplain management standards apply to areas rated AE. The remaining portion of the project site, located in the northeast corner of the site, is designated as Zone X, an area of 0.2 percent annual chance flood hazard.

Section 13.08.145 of the Sacramento City Municipal Code (Mitigation of drainage impacts; design and procedures manual for water, sanitary sewer, storm drainage, and water quality facilities) requires that when a property contributes drainage to the storm drain system or combined sewer system, all stormwater and surface runoff drainage impacts resulting from the improvement or development must be fully mitigated to ensure that the improvement or development does not affect the function of the storm drain system or combined sewer system, and that an increase in flooding or in water surface elevation that adversely affects individuals, streets, structures, infrastructure, or property does not occur. The project is within the City's separated sewer system service area and would be subject to Sewer System Development Fees, which are intended to recover an appropriate share of the capital costs of the City's existing and/or new sewer system facilities. . In addition to sewer service provided by the City of Sacramento Department of Utilities, the project would also be within the SRCSD. In order to connect with the SRCSD wastewater conveyance and treatment system, developers must pay impact fees.[23] For projects located in new development areas of the SRCSD service area, single-unit residential customers must pay 6,479 dollars per dwelling unit.

STANDARDS OF SIGNIFICANCE

For purposes of this Initial Study, impacts to hydrology and water quality may be considered significant if construction and/or implementation of the proposed project would result in the following impacts that remain significant after implementation of general plan policies or mitigation from the 2035 General Plan Master EIR:

- Substantially degrade water quality and violate any water quality objectives set by the State Water Resources Control Board (SWRCB), due to increases in sediments and other contaminants generated by construction and/or development of the proposed project; or
- Substantially increase the exposure of people and/or property to the risk of injury and damage in the event of a 100-year flood.

[23] Regional San. *Impact Fees.* Available at: https://www.regionalsan.com/impact-fees-businesses. Accessed January 2022.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

Chapter 4.7 of the Master EIR evaluates the potential effects of the 2035 General Plan as they relate to surface water, groundwater, flooding, stormwater and water quality. Potential effects include water quality degradation due to construction activities (Impacts 4.7-1, 4.7-2), and exposure of people to flood risks (Impacts 4.7-3). Policies included in the 2035 General Plan, including a directive for regional cooperation (Policies ER 1.1.2, EC 2.1.1), comprehensive flood management (Policy EC 2.1.23), and construction of adequate drainage facilities with new development (Policy ER 1.1.1 to ER 1.1.10) were identified that the Master EIR concluded would reduce all impacts to a less-than-significant level.

ANSWERS TO CHECKLIST QUESTIONS

Question A

The proposed project has the potential to effect water quality during both construction and operation. Further details regarding the potential effects are provided below.

Construction

Construction activities associated with the proposed project would create the potential to degrade water quality from increased sedimentation and increased discharge (increased flow and volume of runoff) associated with storm water runoff. In addition, construction activities may have an adverse impact on the on-site wetlands. The SWRCB adopted a statewide general NPDES permit for stormwater discharges associated with construction activity. Dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2012-0006-DWQ. Construction activity subject to the General Permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation. The proposed project would include disturbance of approximately 20.40 acres; thus, the project would be subject to the aforementioned regulations.

The City's SQIP contains a Construction Element that guides implementation of the NPDES Permit for Storm Water Discharges Associated with Construction Activity. The General Construction Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list BMPs the discharger would use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutant to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP. Compliance with City requirements to protect storm water inlets would require the developer to implement BMPs such as the use of straw wattles, sandbags, gravel traps, and filters; erosion control measures such as vegetation and physical stabilization; and sediment control measure such as fences, dams, barriers, berms, traps, and basins. City staff inspects and enforces the erosion, sediment and pollution control requirements in accordance with City codes (Grading, Erosion and Sediment Control Ordinance).

Conformance with City regulations and permit requirements along with implementation of BMPs would ensure that all such construction activities of the proposed project would result in a less-than-significant impact related to water quality.

Operations

Because the project would involve development of residential units on currently undeveloped land, the amount of impervious surface would substantially increase. As a result, following implementation of the project, less pervious surface area would be available on-site for stormwater to infiltrate on-site soils.

Consistent with Chapter 13.16.120 of the Municipal Code, the post-development stormwater flows from the site would be required to be equal to or less than pre-development conditions.

As a standard Condition of Approval (COA) for development projects in the City, the City's Department of Utilities requires preparation and submittal of project-specific drainage studies. With submittal of the required drainage study, the Department of Utilities would review the Improvement Plans for the proposed project prior to approval to ensure that adequate water quality control facilities and certified full capture trash control devices are incorporated. It should be noted that the proposed project would comply with Section 13.08.145, Mitigation of drainage impacts; design and procedures manual for water, sanitary sewer, storm drainage, and water quality facilities, of the Municipal Code, which requires the following:

> "When property that contributes drainage to the storm drain system or combined sewer system is improved or developed, all stormwater and surface runoff drainage impacts resulting from the improvement or development shall be fully mitigated to ensure that the improvement or development does not affect the function of the storm drain system or combined sewer system, and that there is no increase in flooding or in water surface elevation that adversely affects individuals, streets, structures, infrastructure, or property."

As discussed above, a Preliminary Basin Sizing Memorandum was prepared for the proposed project by West Yost[24] to characterize the existing drainage shed of the project area, and ensure that the proposed detention basin and pump station are sized accordingly. The proposed on-site stormwater drainage system would be comprised of storm drain pipes located throughout the site which would transport stormwater to the northwestern corner of the project site, where a pump station and detention basin are proposed. Both the 100-year, 24-hour and the 100-year, 10-day design storm, as well as the 10-year, 24-hour storm, were analyzed within the Preliminary Basin Sizing Memorandum in accordance with City standards for volume sizing of a detention basin. It should be noted that the On-Site Watershed characteristics were modified in the basin sizing analysis to reflect the proposed site improvements. On-site Watershed 2 was also replaced with Watersheds W001 through W031 in the analysis for more precise delineation and routing to the proposed storm system. The proposed project would not include any modifications to the Off-site Watersheds. The modifications to the On-site Watersheds include the following:

- **On-site Watershed 1** flows northwest to the Northern Channel, which conveys runoff to a 48-inch culvert that conveys runoff under the levee to Robla Creek.
- **Watersheds W001 through W031** flow northwest through the proposed on-site pipe system to discharge to the proposed Detention Basin, which is also a discrete watershed.

According to the Preliminary Basin Sizing Memorandum, the pump station would be required to have a 45 cubic feet per second (cfs) firm capacity to adequately maintain the peak flows into the proposed stormwater basin. The proposed pump station would have a 45 cfs firm capacity and a 60 cfs total capacity. In addition, high flow weirs are proposed at the Northern Channel and the East Channel, which would help to prevent off-site flows from entering the proposed detention basin. The proposed high flow weirs would minimize pumping during minor storm events. Furthermore, the proposed project would include the implementation of low-impact development (LID) features, including the proposed detention basin and landscaped/park areas, which are required to manage on-site runoff and water quality.

The bottom of the detention basin would also be excavated and filled with a two-foot layer of gravel to promote infiltration, which would increase storage by an additional 0.15 acre-feet. According to the Preliminary Grading Plan, the project would also include BMPs to comply with all applicable codes and requirements. As such, the proposed stormwater drainage system would meet the City's pump station and detention basin design standards.

Based on the above, adverse impacts related to water quality during project operations would not occur.

[24] West Yost. *Robla Estates Preliminary Basin Sizing Technical Memorandum*. March 31, 2022.

Conclusion

Design of the proposed project site and conformance with City and State regulations would ensure that a substantial degradation to water quality or violation of any water quality objectives due to increases in sediments and other contaminants generated by construction and/or development of the proposed project would not occur. Through compliance with all applicable regulations and policies, the proposed project would not result in significant impacts related to substantial degradation of water quality or violation of any water quality objectives set by the SWRCB due to increases in sediments and other contaminants generated by construction and/or development of the proposed project. Implementation of proposed project would result in a ***less-than-significant*** impact related to drainage and runoff.

Question B

A floodplain is an area that is inundated during a flood event and is often physically discernable as a broad, flat area created by historic flood. According to FEMA's FIRM, the majority of the project site is within Zone AE, a 100-year flood hazard zone. The proposed detention basin and pump station would reduce the flood depth throughout the project site and within the Off-site Watersheds. As shown in Table 7 and Table 8, the hydraulic grade line (HGL) would be reduced with implementation of the proposed project compared to existing conditions during both the 100-year, 24-hour flood, and the 10-year, 24-hour flood.

Table 7
100-Year, 24-Hour Hydraulic Grade Line, (feet [NAVD88])

Scenario	On-Site Upstream of 48-inch culvert	On-Site Detention Basin	Off-Site Rio Linda Boulevard South of Levee	Off-Site Bike Trail South of Levee	Off-Site Rio Robles Avenue
Ground Surface	38.0	36.5	38.0	41.2	41.8
Existing Condition	38.2	-	38.2	38.2	38.2
Proposed Condition	36.2	36.2	36.3	37.7	37.5

Source: West Yost, 2022.

Table 8
10-Year, 24-Hour Hydraulic Grade Line, (feet [NAVD88])

Scenario	On-Site Upstream of 48-inch culvert	On-Site Detention Basin	Off-Site Rio Linda Boulevard South of Levee	Off-Site Bike Trail South of Levee	Off-Site Rio Robles Avenue
Ground Surface	38.0	36.5	38.0	41.2	41.8
Existing Condition	37.5	-	37.5	37.5	37.5
Proposed Condition	34.7	34.3	34.9	37.0	36.8

Source: West Yost, 2022.

The addition of 45 cfs to the 2,900 cfs contained in Robla Creek is not anticipated to affect the water surface elevation or freeboard. FEMA freeboard requirements state that three-feet of freeboard from the 100-year water surface elevation to the levee crest is required. Currently, the freeboard of Robla Creek is four-feet as indicated by the 100-year water surface elevation in the FEMA flood insurance study for the project area.[25]

[25] West Yost. *Robla Estates Preliminary Basin Sizing Technical Memorandum*. March 31, 2022.

Pursuant to Section 15.104.050 of the City's Municipal Code, new construction is required to place the lowest floor of residential structures at least one foot above the base flood elevation. In addition, Section 11 of the City's Design and Procedure Manual requires the new construction place the lowest floor of residential structures at least one foot above the overland release path. However, according to the Preliminary Basin Sizing Memorandum, adhering to the aforementioned criteria would be infeasible at the project site, as the project site is the regional low point on the upstream side of the levee. As such, the overland release path would be above Rio Linda Boulevard. Accordingly, the City would require the following conditions of approval as a variance to Section 11:

- The minimum finished floor elevation shall be set to the 100-year, 24-hour HGL with complete pump station failure 38.7 feet above mean sea level (msl) which is similar to FEMA precedence.
- The minimum 10-year, 24-hour HGL with complete pump failure shall be set at or below the top of the drop inlet and less than or equal to six inches above the gutter flowline in low lying areas. At all locations, the 10-year is below grade at manhole rim elevation with complete pump failure. At the lowest roadway rim elevation of 37.9 feet, the 10-year, 24-hour with complete pump failure, there is no water in the roadway (HGL is 37.8 feet above msl).

Given that the proposed stormwater drainage system would reduce the flood depth throughout the project site, and the proposed project would comply with the aforementioned conditions of approval, as required by the City, impacts related to flooding would be considered less than significant, and implementation of proposed project would result in a ***less-than-significant*** impact related to flooding.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Hydrology and Water Quality.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
10. NOISE Would the project: A) Result in exterior noise levels in the project area that are above the upper value of the normally acceptable category for various land uses due to the project's noise level increases?			X
B) Result in residential interior noise levels of 45 dBA L_{dn} or greater caused by noise level increases due to the project?			X
C) Result in construction noise levels that exceed the standards in the City of Sacramento general plan or Noise Ordinance?			X
D) Permit existing and/or planned residential and commercial areas to be exposed to vibration-peak-particle velocities greater than 0.5 inches per second due to project construction?			X
E) Permit adjacent residential and commercial areas to be exposed to vibration peak particle velocities greater than 0.5 inches per second due to highway traffic and rail operations?			X
F) Permit historic buildings and archaeological sites to be exposed to vibration-peak-particle velocities greater than 0.2 inches per second due to project construction and highway traffic?			X

ENVIRONMENTAL SETTING

The discussions below are based on the Environmental Noise Assessment prepared for the proposed project by Bollard Acoustical Consultants, Inc., dated February 18, 2022 (see Appendix J). The following section presents basic information related to noise and vibration, as well as the existing noise environment at the project site.

Noise

Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz). Discussing sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference defined as 0 dB. Other sound pressures are compared to the reference pressure and the logarithm is taken to keep the numbers in practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. A strong correlation exists between the way humans perceive sound and A-weighted sound levels. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment for community exposures. All sound levels expressed as dB in this section are A-weighted sound levels, unless noted otherwise.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors, day-night average level (L_{dn}) and the community noise equivalent level (CNEL), and shows very good correlation with community response to noise for the average person. The median noise level descriptor, denoted L_{50}, represents the noise level which is exceed 50 percent of the hour. In other words, half of the hour ambient conditions are higher than the L_{50} and the other half are lower than the L_{50}.

The L_{dn} is based upon the average noise level over a 24-hour day, with a +10 dB weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, L_{dn} tends to disguise short-term variation in the noise environment. Where short-term noise sources are an issue, noise impacts maybe assessed in terms of maximum noise levels, hourly averages, or other statistical descriptors.

Another common descriptor is the CNEL. The CNEL is similar to the L_{dn}, except CNEL has an additional weighting factor. Both average noise energy over a 24-hour period. The CNEL applies a +5 dB weighting to events that occur between 7:00 PM and 10:00 PM, in addition to the +10 dB weighting between 10:00 PM and 7:00 AM associated with L_{dn}. Typically, the CNEL and L_{dn} result in similar results for the same noise events, with the CNEL sometimes resulting in reporting a 1 dB increase compared to the L_{dn} to account for noise events between 7:00 PM and 10:00 PM that have the additional weighting factor.

Vibration

Vibration, like noise, involves a source, a transmission path, and a receiver. While vibration is related to noise, vibration differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and a frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating. Vibration can be measured in terms of acceleration, velocity, or displacement. Vibration magnitude is measured in vibration decibels (VdB) relative to a reference level of one micro-inch per second peak particle velocity (ppv), the human threshold of perception. The background vibration level in residential areas is usually 50 VdB or lower. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible. The range of environmental interest is typically from 50 VdB to 90 VdB (or 0.12 inch per second ppv), the latter being the general threshold where structural damage can begin to occur in fragile buildings.

Existing Noise Environment

The existing noise environment is defined by traffic on Rio Linda Boulevard to the west of the project site. The current noise levels comply with the applicable policies, as defined below. The nearest off-site noise-sensitive receptor is the single-unit residence located to the west of the site, across Rio Linda Boulevard. Although other residences are located closer to the project site, the Environmental Noise Assessment identified this residence as being the most likely to be impacted by increased traffic, and thus noise pollution, due to its proximity to Rio Linda Boulevard. Existing Rio Linda Boulevard traffic noise exposure is calculated to be approximately 63.0 dB day-night average sound level (DNL) when projected to the outdoor activity area (backyard) of the nearest existing residence located approximately 100 feet from the roadway centerline.[26]

[26] Dario Gotchet, Principal Consultant, Bollard Acoustical Consultants, Inc. Personal Communication [email] with Angela DaRosa, Division Manager of Raney Planning and Management, Inc. April 4, 2022.

STANDARDS OF SIGNIFICANCE

For purposes of this Initial Study, impacts due to noise may be considered significant if construction and/or implementation of the proposed project would result in the following impacts that remain significant after implementation of General Plan policies:

- Result in exterior noise levels in the project area that are above the upper value of the normally acceptable category for various land uses due to the project's noise level increases;
- Result in residential interior noise levels of 45 dBA L_{dn} or greater caused by noise level increases due to the project;
- Result in construction noise levels that exceed the standards in the City of Sacramento Noise Ordinance;
- Permit existing and/or planned residential and commercial areas to be exposed to vibration-peak-particle velocities greater than 0.5 inches per second due to project construction;
- Permit adjacent residential and commercial areas to be exposed to vibration peak particle velocities greater than 0.5 inches per second due to highway traffic and rail operations; or
- Permit historic buildings and archaeological sites to be exposed to vibration-peak-particle velocities greater than 0.2 inches per second due to project construction and highway traffic.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR evaluated the potential for development under the 2035 General Plan to increase noise levels in the community. New noise sources include vehicular traffic, aircraft, railways, light rail and stationary sources. The general plan policies establish exterior (Policy EC 3.1.1) and interior (EC 3.1.3) noise standards. A variety of policies provide standards for the types of development envisioned in the General Plan.

See Policy EC 3.1.8, which requires new mixed-use, commercial and industrial development to mitigate the effects of noise from operations on adjoining sensitive land use, and Policy 3.1.9, which calls for the City to limit hours of operations for parks and active recreation areas to minimize disturbance to nearby residences. Notwithstanding application of the general plan policies, noise impacts for exterior noise levels (Impact 4.8-1) and interior noise levels (Impact 4.8-2), and vibration impacts (Impact 4.8-4) were found to be significant and unavoidable.

ANSWERS TO CHECKLIST QUESTIONS

<u>Questions A and B</u>

During project operations, the primary source of noise would be generated from traffic on the adjacent roadways. Operational noise associated with the proposed project is discussed in further detail below.

Operational Noise at Off-Site Receptors

The proposed project would include typical residential noise, which would be compatible with the adjacent existing residential uses. In addition, residential uses do not generate substantial noise. Therefore, impacts resulting from project-generated operational noise would be considered less than significant.

Traffic Noise at Off-Site Receptors

As previously mentioned, the existing Rio Linda Boulevard traffic noise exposure at the nearest off-site receptor is calculated to be approximately 63.0 dB DNL. After conservatively applying a factor of 50 percent for future traffic volumes (calculated to be approximately 6,411 vehicles per day), future Rio Linda traffic

noise exposure is projected to be approximately 64.7 dB DNL at the nearest existing single-unit residential use. Thus, the resulting increase in future traffic noise level exposure is calculated to be 1.7 dB DNL.[27]

The Federal Interagency Committee on Noise (FICON) increase significance criteria is commonly used in assessing project-generated traffic noise impacts within a project roadway network. According to FICON, where pre-project ambient conditions are between 60 and 65 dB DNL, a 3 dB increase is applied as the standard of significance. As mentioned above, future traffic would result in a noise level increase of 1.7 dB DNL at the backyard of the nearest existing residential use adjacent to the project site. The calculated increase of 1.7 dB DNL would be below the applicable FICON 3 dB increase significance criterion. Therefore, impacts related to traffic noise at off-site receptors would be considered less than significant.

Traffic Noise at On-Site Receptors

CEQA does not require an analysis of the environment's impact on the proposed project; however, noise-related effects on future residents of the project are typically evaluated to determine consistency with the City of Sacramento's policies. While not required under CEQA, the following section regarding off-site transportation noise effects on future residents of the project is provided for informational purposes.

As described in the Environmental Noise Assessment prepared for the proposed project, the future Average Daily Traffic (ADT) for Rio Linda Boulevard was conservatively estimated by increasing the existing ADT volume by a factor of 50 percent. The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA) was used to predict traffic noise levels at the project site. The existing ADT volume for Rio Linda Boulevard was obtained from data published by the Sacramento County Department of Transportation. The predicted future Rio Linda Boulevard day-night average for the proposed project are presented in Table 7 below.

Table 9
Predicted Future Exterior Traffic Noise Levels at the Project Site[1]

Roadway	Receiver Description[2]	Predicted Future Exterior DNL (dB)[3,4]
Rio Linda Boulevard	Nearest Public Park – Lot F	65
	Nearest Primary Open Spaces – Side Yards	60
	Nearest First-Floor Building Facades	67
	Nearest Upper-Floor Building Facades	69

1 A complete listing of FHWA Model Inputs and results for Rio Linda Boulevard are provided as Appendix D.
2 The nearest public park is located in the southern portion of the project site, and the nearest open spaces and building facades are located in the northern portion of the project site, adjacent to Rio Linda Boulevard.
3 Predicted noise level at residential side yards include an offset of -5 dB to account for a reduced view of the roadway that would be provided by proposed intervening buildings (residences).
4 Predicted noise levels at upper-floor building facades include a +2 dB offset to account for reduced ground absorption of sound at elevation positions.

Source: BAC, 2022.

As indicated in Table 7, predicted future Rio Linda Boulevard traffic noise level exposure at the nearest proposed public park on the project site would satisfy the Sacramento General Plan 70 dB DNL exterior noise level standard applicable to neighborhood parks. The Table 7 data also indicate that future Rio Linda Boulevard traffic noise exposure is predicted to satisfy the General Plan 60 dB DNL exterior noise level standard at the primary open spaces (side yards) of the nearest residences to the roadway.

[27] Dario Gotchet, Principal Consultant, Bollard Acoustical Consultants, Inc. Personal Communication [email] with Angela DaRosa, Division Manager of Raney Planning and Management, Inc. April 4, 2022.

Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof) typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Therefore, provided future traffic noise levels do not exceed 70 dB DNL at exterior building facades, standard construction practices would be adequate to ensure compliance with the Sacramento General Plan 45 dB DNL interior noise level standard.

As indicated in Table 7, future exterior Rio Linda Boulevard traffic noise level exposure is predicted to be 67 dB DNL at the first-floor building facades of residences constructed nearest to the roadway. Due to reduced ground absorption at elevated positions, future exterior traffic noise levels at the upper-floor facades of those buildings are predicted to approach 69 dB DNL. Based on the exterior to interior noise reduction typically achieved with standard residential construction, window and door construction upgrades would not be warranted for satisfaction of the General Plan 45 dB DNL interior noise level standard at the project site.

Conclusion

Because the proposed project would comply with the City of Sacramento's exterior and interior noise level requirements, the project would not result in exterior noise levels in the project area that are above the upper value of the normally acceptable category for various land uses nor would the project result in residential interior noise levels of 45 dBA L_{dn} or greater. Therefore, the project would result in a ***less-than-significant*** impact.

Question C

Construction phases of the proposed project would add to the noise environment in the immediate project vicinity. Table 8 shows maximum noise levels associated with typical construction equipment. Based on the table, activities associated with typical construction would generate maximum noise levels up to 85 dB at a distance of 50 feet.

Table 10
Construction Equipment Noise

Type of Equipment	Maximum Level, dB at 50 feet
Backhoe	78
Compactor	83
Compressor (air)	78
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Pneumatic Tools	85

Source: Federal Highway Administration, Roadway Construction Noise Model User's Guide, January 2006.

As one increases the distance from a source of noise, dispersion and distance attenuation reduce the effects of the source. The noise levels from a source will decrease at a rate of approximately six dB per every doubling of distance from the noise source. The nearest sensitive receptor to the project site is a single-unit residence located approximately 200 feet to the west of the project site, across Rio Linda Boulevard. Therefore, noise levels experienced by the nearest sensitive receptors would be significantly reduced from the levels depicted. In addition, construction noise would occur over a relatively short period of time, and the noise generated by the existing roadway located between the project site and nearest sensitive receptor would nullify potential impacts from the proposed project's construction noise on the nearest sensitive receptor. In addition, construction activities would occur at different locations on the project site at different times. Thus, whatever noise levels the nearest sensitive receptors would be exposed to would only occur at certain points in the construction activities, not throughout.

The City's Noise Ordinance exempts construction operations that occur between 7:00 AM and 6:00 PM, Monday through Saturday, and between 9:00 AM and 6:00 PM on Sundays, from the applicable noise standards. However, if construction operations were to occur during the noise-sensitive hours of 6:00 PM to 7:00 AM, Monday through Saturday, or from 6:00 PM to 9:00 AM on Sunday, the applicable noise standards could potentially be exceeded at the aforementioned sensitive receptors surrounding the project site. However, because the City has determined that all construction within the City limits must comply with the City's Noise Ordinance, nighttime construction activities would not occur and construction noise associated with use of both on-site and off-site equipment during the project construction phases, including roadway improvements, would be insignificant.

Because the proposed project would be required to adhere to the City's Noise Ordinance and the increase in noise levels from construction activities would be temporary, noise levels associated with construction of the proposed project would not result in construction noise levels that exceed the standards in the City of Sacramento General Plan or Noise Ordinance. Therefore, implementation of proposed project would result in a ***less-than-significant*** impact related to construction noise.

Question D through F

For structural damage, the California Department of Transportation (Caltrans) uses a vibration limit of 0.5 inches per second (in/sec) ppv, for buildings structurally sound and designed to modern engineering standards; 0.2 in/sec ppv for buildings that are found to be structurally sound but where structural damage is a major concern; and a conservative limit of 0.08 in/sec ppv for ancient buildings or buildings that are documented to be structurally weakened.[28] Accordingly, the City uses a threshold of significance for vibration levels of 0.5 in/sec ppv for residential and commercial areas, and 0.2 in/sec ppv for historic buildings and archaeological sites.

Operations of the proposed residential project would not generate groundborne vibration. During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of construction activites. The primary vibration-generating activities would be grading, utilities placement, and off-site roadway improvements. Table 9 shows the typical vibration levels produced by construction equipment.

Table 11
Vibration Levels for Various Construction Equipment

Type of Equipment	PPV at 25 feet (inches/second)	PPV at 50 feet (inches/second)	PPV at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

Source: Transit Noise and Vibration Impact Assessment Guidelines. Federal Transit Administration. May 2006.

As shown in Table 9, construction activities are anticipated to generate vibration levels ranging from 0.003 in/sec ppv to 0.210 in/sec ppv at a distance of 25 feet. The nearest noise-sensitive receptor is located approximately 200 feet west of the project site boundary as well as 35 feet from the Rio Linda Boulevard right-of-way, and, therefore, would experience vibration levels less than the 0.5 in/sec ppv threshold for residential areas during both on-site and off-site construction activities. As such, implementation of proposed project would result in a ***less-than-significant*** impact related to groundborne vibration.

[28] California Department of Transportation. *Transportation and Construction Vibration Guidance Manual*. September 2013.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Noise.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
11. PUBLIC SERVICES Would the project: A) Would the project result in the need for new or altered services related to fire protection, police protection, school facilities, or other governmental services beyond what was anticipated in the 2035 General Plan?			X

ENVIRONMENTAL SETTING

The City of Sacramento provides fire, police, and parks and recreation services in the vicinity of the project site.

The Sacramento Fire Department (SFD) provides fire protection services to the entire City and some small areas just outside the City boundaries within the County limits. SFD provides fire protection and emergency medical services to the project area. First-response service is provided by Station 17, located at 1311 Bell Avenue, approximately 1.4 miles southeast of the project site. Service is also provided by Station 18, located at 746 North Market Boulevard, approximately 2.10 miles southwest of the site.

The Sacramento City Police Department (SPD) provides police protection services to the project area. The project area is serviced by North Command which is located at the 3550 Marysville Boulevard, approximately 2.47 miles southeast of the project site. In addition to the SPD, the Sacramento County Sheriff's Department, California Highway Patrol (CHP), UC Davis Medical Center Police Department, and the Regional Transit Police Department aid the SPD to provide protection for the City.

The project site is within the Robla School District for primary level education, which feeds into the Twin Rivers Unified School District at the secondary level. The Robla School District serves approximately 2,500 students on six campuses.[29] The Twin Rivers Unified School District serves 27,000 students on 52 campuses.[30] The nearest school, Robla Elementary School, is located 717 feet southeast of the project site. In addition, Dry Creek Elementary School, Rio Linda Preparatory Academy, and Rio Linda High School are located approximately 1.2 miles northeast of the project site.

The City of Sacramento Department of Youth, Parks and Community Enrichment (Department of YPCE) oversees more than 4,255.5 acres of parkland, and manages more than 223 parks within the City. The project site is located approximately 0.95-mile east of the Hansen Ranch Park and approximately 0.77-mile northeast of North Point Park. In addition, the project site is located approximately one mile southwest of Linda Creek Park, approximately 1.03 miles southwest of the Roy Hayer Park, and approximately 1.14 miles northeast of Robla Community Park.

[29] Robla School District. *About the District*. Available at: https://www.robla.k12.ca.us/apps/pages/index.jsp?uREC_ID=568832&type=d&pREC_ID=1065810. Accessed January 2022.

[30] Twin Rivers Unified School District. *About.* Available at: https://www.twinriversusd.org/About/index.html. Accessed January 2022.

STANDARDS OF SIGNIFICANCE

For the purposes of this Initial Study, an impact would be considered significant if the project resulted in the need for new or altered services related to fire protection, police protection, school facilities, or other governmental services beyond what was anticipated in the 2035 General Plan.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR evaluated the potential effects of the 2035 General Plan on various public services. Police, fire protection, schools, libraries and emergency services were evaluated in Chapter 4.10 of the Master EIR.

The General Plan provides that adequate staffing levels for police and fire are important for the long-term health, safety and well-being of the community (Goal PHS 1.1, PHS 2.1). The Master EIR concluded that effects of development that could occur under the General Plan would be less than significant.

General Plan policies that call for the City to consider impacts of new development on schools (see, for example, Policy ERC 1.1.2 setting forth locational criteria, and Policy ERC 1.1.4 that encourages joint-use development of facilities) reduce impacts on schools to a less-than-significant level (Impacts 4.10-3, 4). Impacts on library facilities were considered less than significant (Impact 4.10-5).

ANSWERS TO CHECKLIST QUESTIONS

The proposed project involves the development of 177 single-unit residences on approximately 20.40 acres. The development of the proposed project would introduce new residents to the area. As such, the proposed project would result in an increase in demand for fire and police protection services, as well as schools and other public facilities and services.

Question A

The following discussions pertain to the existing fire protection, police protection, schools, and other governmental facilities and services in the project vicinity, as well as the proposed project's impacts related to such facilities and services.

Fire Protection

The SFD provides fire protection services to the entire City, and small areas within Sacramento County just outside of the City limits. The SFD serves a population of over 738,000 in a 358 square mile service area. The SFD has approximately 155 on-duty personnel working daily to serve the City.[31]

Multiple SFD stations already serve the project area. The closest fire station to the project site is SFD Station 17, located at 1311 Bell Avenue, approximately 1.4 miles southeast of the project site. Service is also provided by Station 18, located at 746 North Market Boulevard, approximately 2.10 miles southwest of the site. As stated within the Sacramento General Plan EIR, the goal of the SFD is to have fire suppression and paramedic services arrive at the scene within four minutes. Considering the proximity of the project site to Stations 17 and 18, a reasonable assumption can be made that response times from the SFD would meet the four-minute response time goal.

Within the General Plan, Policy PHS 2.1.11 states that the City shall require development projects to contribute fees for fire protection services and facilities. As a result of Policy PHS 2.1.11, the project would be required to pay applicable development fees financially supporting the SFD. While the proposed project requires a General Plan Amendment to change the land use designation of the site from Suburban Neighborhood Low Density and Suburban Center to Suburban Neighborhood Medium Density, the

[31] Metro Fire Sacramento. *About Us*. Available at: https://metrofire.ca.gov/about-us. Accessed January 2022.

proposed land use designation is similar to the project site's existing land use designation in that both designations are residential in nature. Thus, the proposed project is generally consistent with the General Plan, and it is reasonable to assume that development of the project site with residential uses has been generally anticipated within the General Plan. Considering that the project is generally consistent with the General Plan and the proximity of the site to Stations 17 and 18, the proposed project would not result in the need for new or altered services related to fire protection and a less-than-significant impact would occur.

Police Protection

The SPD provides police protection services within the City boundaries, including the project area. The SPD uses a variety of data that includes geographic information system (GIS) based data, call and crime frequency information, and available personnel to rebalance the deployment of resources on an annual basis to meet the changing demands of the City. In addition, the Sacramento County Sheriff's Department provides police protection services outside the City limits but within the Planning Area. According to the General Plan EIR, as buildout of the General Plan occurs, the SPD would need new, decentralized facilities that would be required to maintain adequate response times. Currently, the SPD averages an eight minute and five second response time.

Similar to the SFD, the added population from the proposed project would create an increased demand in police services to the project area; however, as mentioned above, because the proposed project is generally consistent with the General Plan, the associated increase in population has been generally anticipated by the City. The General Plan policies include measures to accommodate for growth and increased service demands. Specifically, Policy PHS 1.1.1 calls for the City to prepare a Police Master Plan to address staffing and facility needs. In addition, Policy PHS 1.1.8 within the Master EIR requires development projects to contribute fees for police facilities. As a result, the proposed project would pay applicable development impact fees to fund necessary police services. Implementation of polices and goals required within the General Plan would reduce growth inducing impacts on police services to a less-than-significant impact.

Considering the above, the proposed project would not result in the need for new or altered services related to police protection and a less-than-significant impact would occur.

Schools

The City is served by six school districts providing public elementary, middle school, and high school opportunities. The school districts include the Sacramento City Unified School District, Twin Rivers Unified School District, Robla School District, Natomas Unified School District, and the Elk Grove Unified School District. The proposed project is within the Robla School District and the Twin Rivers Unified School District. Neither school districts have any schools that are at or above capacity.[32,33]

Development of the proposed project would generate additional students in the area. However, as discussed above, the proposed project would generally be consistent with the General Plan land use anticipated for the site. As such, the increase in students associated with buildout of the site has generally been addressed in the 2035 General Plan EIR. As stated within the General Plan EIR, all impacts on schools are considered to be less than significant with payment of the State Department of Education Development Fee, which was enacted to provide for school facilities construction, improvements, and expansion. Policies ERC 1.1.1 and 1.1.2 encourage the City to work with school districts to ensure that schools are provided to serve all existing and future residents and constructed in the neighborhoods that they serve, in safe locations, and connected to surrounding uses by walkways, bicycle paths, and greenway.

---

[32] Robla School District. *About the District*. Available at: https://www.robla.k12.ca.us/apps/pages/index.jsp?uREC_ID=568832&type=d&pREC_ID=1065810. Accessed January 2022.

[33] Twin Rivers Unified School District. *About*. Available at: https://www.twinriversusd.org/About/index.html. Accessed January 2022.

As a result, implementation of education development fees and policies within the General Plan would ensure the proposed project's impacts on schools would be less than significant.

Other Governmental Services

The Sacramento Public Library (SPL) serves the cities of Sacramento, Citrus Heights, Elk Grove, Galt, Iselton, Rancho Cordova, and the County of Sacramento. The SPL authority is governed by a Joint Exercise of Powers Agreement between the aforementioned cities and counties to provide public library services to all citizens in the jurisdiction. Currently, 16 new libraries are planned for construction in the City and County of Sacramento by 2025. Based on plans set forth in the SPL Authority Facility Master Plan, the SPL expects to provide 1,007,274 sf of library space throughout the SPL Authority's service area by 2025. The new library space would meet the target level of 0.40 sf library facilities per capita, defined in the General Plan EIR.

Due to the increase in population at the project site, the proposed project would result in an increase in demand for other governmental services, such as library services. The Rio Linda Library, located approximately 1.62 miles north of the project site, and the Del Paso Heights Library, located approximately 2.1 miles south of the project site, currently serve the project area.

Because the proposed project would be required to comply with the General Plan policies, and the SPL Facility Master Plan outlines plans to meet the library target level in 2025, the proposed project would not result in the need for new or altered governmental services beyond what was anticipated in the 2035 General Plan and a less-than-significant impact would occur.

Conclusion

As noted above, the applicant would be required to pay all of the required development fees to the appropriate public services departments. Payment of such would ensure that impacts related to fire protection, police protection, school facilities, or other governmental services would be reduced to a ***less-than-significant*** level.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Public Services.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
12. RECREATION Would the project: A) Cause or accelerate substantial physical deterioration of existing area parks or recreational facilities?			X
B) Create a need for construction or expansion of recreational facilities beyond what was anticipated in the 2035 General Plan?			X

ENVIRONMENTAL SETTING

Natural resources and parks provide a wide range of recreational opportunities for residents in the vicinity of the project site. The City currently contains 230 developed and undeveloped park sites, 88 miles of off-street bikeways and trails, 21 lakes/ponds or beaches, over 20 aquatic facilities, and extensive recreation facilities in the City parks. With the inclusion of the City's golf courses (633 acres) and Camp Sacramento, which is located in El Dorado County (19 acres), the City's parkland total is approximately 4,829 acres. The proposed project is near the 265.41-acre Hanson Ranch Park Site, which is located approximately 0.38-mile to the west, across Rio Linda Boulevard.

STANDARDS OF SIGNIFICANCE

For the purposes of this IS/MND, impacts to recreational resources are considered significant if the proposed project would do either of the following:

- Cause or accelerate substantial physical deterioration of existing area parks or recreational facilities; or
- Create a need for construction or expansion of recreational facilities beyond what was anticipated in the 2035 General Plan.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

Chapter 4.9 of the Master EIR considered the effects of the 2035 General Plan on the City's existing parkland, urban forest, recreational facilities and recreational services. The General Plan identified a goal of providing an integrated park and recreation system in the City (Goal ERC 2.1). New residential development is required to dedicate land, pay in-lieu fees, or otherwise contribute a fair share to the acquisition and development of parks and recreation facilities (Policy ERC 2.2.5). Impacts were considered less than significant after application of the applicable policies (Impacts 4.9-1 and 4.9-2).

ANSWERS TO CHECKLIST QUESTIONS

Questions A and B

The proposed project includes the construction of 177 two-story single-unit residences. In addition, the proposed project includes the development of a public park in the center of the site, as well as multiple landscaped areas interspersed among the residential units. The park would include two tot lots in the center, as well as paved pathways that would provide pedestrian access from Rio Linda Boulevard throughout the park area. Such pathways would extend to the north and south, also connecting to the North Sacramento Bike Trail to the east. As such, future residents of the proposed project would use recreational facilities both on the project site and in the project vicinity. Implementation of the policies and goals within the General Plan would reduce impacts to parks and recreational facilities to a less-than-significant level. For example,

Policy ERC 2.2.1 states that all new development shall be consistent with the applicable provisions of the Parks and Recreation Master Plan. In addition, because the project site is designated in the General Plan for residential development, and would not substantially increase the population beyond what was anticipated, as discussed in the Population and Housing section of this IS, the increased population associated with the proposed project, and increase in demand for recreational facilities, was generally anticipated and analyzed within the 2035 General Plan Master EIR. Furthermore, pursuant to City Code 18.56.230, the proposed project would be required to pay a Park Development Impact Fee prior to issuance of a building permit. The City would use the Park Development Impact Fee to finance the design, construction, installation, improvement, and acquisition of park facilities for neighborhood parks within two miles of the development project, community parks within five miles of the development project, and regional and citywide park facilities located anywhere in the City.

Based on the above, given the project consistency with the Parks and Recreation Master Plan and the City's General Plan, and the required payment of the Park Development Impact Fee, implementation of the proposed project would result in a ***less-than-significant*** impact related to recreation.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Recreation.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
13. TRANSPORTATION AND CIRCULATION Would the project: A) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities?			X
B) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?		X	
C) Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X
D) Result in inadequate emergency access?			X

ENVIRONMENTAL SETTING

The following section is based on information from the City of Sacramento 2035 General Plan, the 2035 General Plan Master EIR, and the VMT Analysis prepared by DKS Associates for the proposed project.[34]

The only roadway in the vicinity of the project site is Rio Linda Boulevard to the west. Rio Linda Boulevard is a two-lane major collector roadway with a posted speed limit of 45 miles per hour (mph). Rose Street is located east of the project site, across the Sacramento Northern Bike Trail, and has a 25-mph posted speed limit. I-5 is located approximately 4.5 miles west of the project site and I-80 is located approximately 1.62 miles south of the project site. The Rio Linda Boulevard/Marysville Boulevard/Claire Avenue intersection, which is located south of the project site, is the closest intersection to the site.

Continuous sidewalks do not exist within the vicinity of the project site. The City's Bicycle Master Plan shows that a Class I Bike Path exists on Rio Linda Boulevard to the south of the project site. However, the path diverges from Rio Linda Boulevard and joins the Sacramento Northern Bike Trail along the eastern boundary of the project site. According to the Bicycle Master Plan, on-street bike facilities have been proposed on Rio Linda Boulevard along the project frontage.

Public transit service within the project site is provided by bus, which is operated by the Sacramento Regional Transit (RT). Route 19 provides service on Rio Linda Boulevard. The route features a bus stop on the intersection of Pinedale Avenue and Rio Linda Boulevard, approximately 1,460 feet south of the project site. The route begins at Watt Avenue and Elverta Road and the last stop is Arden Way and Del Paso Boulevard. Monday through Friday, Route 19 operates from 5:50 AM to 8:38 PM. On Saturdays, Route 19 operates from 7:05 AM to 6:53 PM. On Sundays and holidays, Route 19 operates from 7:05 AM to 6:53 PM.

STANDARDS OF SIGNIFICANCE

Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Pursuant to Section 15064.3, analysis of VMT attributable to a project is the most

[34] DKS Associates. *VMT Analysis*. April 1, 2022.

appropriate measure of transportation impacts, with other relevant considerations consisting of the effects of the project on transit and non-motorized travel. VMT is the total miles of travel by personal motorized vehicles a project is expected to generate in a day. VMT measures the full distance of personal motorized vehicle-trips, with one end within the project site. Based on current practices from the City of Sacramento for residential projects, transportation impacts for CEQA purposes are considered significant if the proposed project would generate Household VMT per capita figures that exceed 85 percent of the regional average for Household VMT per capita, consistent with technical advisory guidance published by the Governor's Office of Planning and Research (OPR) in 2018.

Several screening thresholds are used to quickly determine whether a project may be presumed to have a less-than-significant VMT impact without conducting a detailed project generated VMT analysis. For residential projects, screening criteria includes:

1. Small Projects – projects that generate or attract fewer than 110 trips per day;
2. Map-Based Screening – projects located in areas that are known to generate below-average VMT;
3. Near Transit Stations – projects within 0.5-mile of an existing major transit stop or an existing stop along a high-quality transit corridor; or
4. Affordable Residential Development – projects that include affordable housing within an infill location.

Lastly, for purposes of this Initial Study, impacts resulting from changes in transportation or circulation may be considered significant if construction and/or implementation of the proposed project would result in the following impacts that remain significant after implementation of General Plan policies or mitigation from the General Plan Master EIR:

Transit

- Adversely affect public transit operations; or
- Fail to adequately provide for access to public transit.

Bicycle Facilities

- Adversely affect bicycle travel, bicycle paths; or
- Fail to adequately provide for access by bicycle.

Pedestrian Circulation

- Adversely affect pedestrian travel, pedestrian paths; or
- Fail to adequately provide for access by pedestrians.

Construction-Related Traffic Impacts

- Degrade an intersection or roadway to an unacceptable level;
- Cause inconveniences to motorists due to prolonged road closures; or
- Result in an increased frequency of potential conflicts between vehicles, pedestrians, and bicyclists.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

Transportation and circulation were discussed in the Master EIR in Chapter 4.12. Various modes of travel were included in the analysis, including vehicular, transit, bicycle, pedestrian and aviation components. Provisions of the 2035 General Plan that provide substantial guidance include Mobility Goal 1.1, calling for a transportation system that is effectively planned, managed, operated and maintained, promotion of multimodal choices (Policy M 1.2.1), support for state highway expansion and management consistent with the Sacramento Area Council of Governments Metropolitan Transportation Plan/Sustainable Communities

Strategy (SACOG MTP/SCS) (Policy M 1.5.6) and development that encourages walking and biking (Policy LU 4.2.1).

While the General Plan includes numerous policies that direct the development of the City's transportation system, the Master EIR concluded that the General Plan development would result in significant and unavoidable effects. See Impacts 4.12-3 (roadway segments in adjacent communities, and Impact 4.12-4 (freeway segments).

ANSWERS TO CHECKLIST QUESTIONS

Question A

The following analysis provides a summary of the project trip generation and distribution, and impacts to transit, bicycle, and pedestrian facilities.

Project Trip Generation and Distribution

According to the VMT Analysis prepared for the proposed project by DKS (see Appendix K), the proposed project would generate approximately 124 AM peak hour trips and 193 PM peak hour trips per day.[35] Although the proposed project is not consistent with the land use designation for the site per the 2035 General Plan, both the proposed and existing land use designations are residential. In addition, as discussed previously in this IS/MND, the increase in population resulting from buildout of the proposed project would generally be within the projections for buildout of the North Sacramento area considered in the General Plan. As such, the proposed project would not result substantial additional impacts beyond what has been anticipated for the site per the General Plan. Therefore, the proposed project would not conflict with a program plan, ordinance or policy addressing the circulation system beyond what has been anticipated by the City per the Master EIR, and a less-than-significant impact would occur.

Transit, Bicycle, and Pedestrian Facilities

As stated above, Sacramento Route 19 would provide transit opportunities for the proposed project. Although the proposed project would increase the population of the area, the project would not add noticeable transit demand; however, any demand added to the transit system could be adequately accommodated by the existing/planned transit system and given that the site was generally anticipated for residential development, the increase in demand generated by proposed project has been generally anticipated in the 2035 General Plan and Master EIR. Additionally, the proposed project would not result in removal of any existing bicycle or pedestrian facilities or preclude the implementation of any proposed or existing off-street trails in the vicinity of the project. In fact, the proposed project would provide pedestrian and bicycle access for the residents through the addition of trails from the project site to the Sacramento Northern Bike Trail, which lies parallel to the project site to the east. Furthermore, consistent with the City's Bicycle Master Plan, the project would include the construction of a bicycle lane and planter sidewalk on Rio Linda Boulevard along the project site's frontage, as well as sidewalks along the internal roadways.

Conclusion

Based on the above, the proposed project would not conflict with a program, plan, ordinance, or policy address the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Therefore, implementation of the proposed project would result in a ***less-than-significant*** impact.

[35] DKS Associates. *VMT Analysis*. April 1, 2022.

Question B

Pursuant to SB 743, in December of 2018, the OPR published the Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory), which is a guidance document to provide advice and recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. The Technical Advisory is intended to be a resource for the public to use at their discretion, and the OPR does not enforce any part of the recommendations contained therein. The Technical Advisory includes recommendations regarding methodology, screening thresholds, and recommended thresholds per land use type. Pursuant to the Technical Advisory, with respect to land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. Strategies and projects that decrease local VMT but increase total VMT should be avoided. The Technical Advisory recommends that lead agencies consider whether their actions encourage development in a less travel-efficient location by limiting development in travel-efficient locations.

Based on current practice of the City of Sacramento, transportation impacts are considered significant if the proposed project would result in a VMT per capita above 85 percent of the regional average, consistent with technical guidance published by OPR and threshold used by other local agencies. Pursuant to SB 743 and technical guidance published by OPR, several screening procedures exist to potentially streamline project analysis. According to the VMT Analysis prepared for the proposed project by DKS Associates, the project does not meet any of the screening criteria and analysis of VMT per capita is necessary. Accordingly, the VMT Analysis conducted an analysis of the proposed project's land use in comparison to the City's threshold of 85 percent of the existing baseline regional VMT per land use unit, as calculated within the SACOG region (residential). The analysis is based on the latest SACOG SACSIM-19 activity-based travel demand model (ABM), including scripts prepared by SACOG for analysis purposes. The analysis is tour-based, meaning that trips which are linked to trips that start or end at the project site are fully accounted for. Intermediate trips, such as those occurring after someone has left the project area (e.g., a trip to pick up lunch while at work) are also accounted for within the analysis.

Based on the latest SACOG model scripts, SACSIM-19 also reflects the entire trip length, including the portion of the trip that occurs outside the SACOG region. External-internal and internal-external VMT is calculated through a script file provided by SACOG and included in their model for VMT post-processing. The post-processor determines the added VMT that occurs outside the SACOG region (i.e., for trips that either start or end outside of the region). The interregional VMT is then added to the internal-internal VMT to determine the total VMT. Consistent with OPR guidelines, only automobile trips are considered as a part of the analysis. Heavy-duty truck and delivery vehicle VMT as well as alternative mode VMT (transit vehicles) are not reflected.

For home-based land uses of the proposed project, SACSIM-19 was modified to add the proposed project per guidance from OPR. A regional baseline (2016) average VMT per capita metric was used to establish the threshold set at 85 percent of the regional average. The project VMT per capita result was then compared to 85 percent of the 2016 regional average VMT per capita result. Without the proposed project, the regional average VMT per capita, as calculated from the model, is 20.2 (85 percent threshold of 17.17). With the proposed project, VMT per capita for the proposed project zone (a new TAZ for the project site split from its parent TAZ for modeling purposes) is 18.5 (91.5 percent of the regional average), which is 6.5 percent over the 85 percent threshold.

However, when taking into consideration the proposed increase in density due to the proposed General Plan and Community Plan Amendment from Suburban Neighborhood Low and Suburban Center to Suburban Neighborhood Medium, the proposed project would be considered consistent with Measure T-1, Increase Residential Density, of the California Air Pollution Control Officers Association (CAPCOA) publication entitled Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health,[36] which results in a further reduction in VMT per capita. Specifically, the site's current land use designation of Suburban Neighborhood Low allows a density of three to eight

[36] California Air Pollution Control Officers Association. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health.* December 2021.

du/ac. In addition, according to CAPCOA, the U.S. average du/ac is 9.1 du/ac. The proposed project would consist of 177 units over 12.51 net acres, resulting in a density of approximately 14.15 du/ac. According to the CAPCOA Handbook, the proposed project's increase in density from what is currently allowed for the site and the U.S. average would result in a VMT per capita reduction of approximately 12 percent, which more than satisfies the 6.5 percent additional reduction required to meet the 85 percent threshold. In addition, commercial uses are planned to the west of the project site, and some commercially-zoned parcels are located in the project vicinity; thus, over time, commercial uses and transit availability in the vicinity would be more likely to serve the area to further help lower VMT. Therefore, with consideration of the proposed project's increase in density and planned commercial uses in the vicinity, the proposed project's VMT per capita would not exceed 85 percent of the regional average, and the impact would be considered ***less-than-significant***.

Question C

Site access would be provided through two new connections from the internal roadway to Rio Linda Boulevard. Internal circulation would be provided by a network of roadways throughout the site, as well as private alleys that would extend between individual residences. As part of the proposed project, Rio Linda Boulevard would be altered to have a roundabout where the street meets the proposed driveway, an open iron fence with masonry along the project frontage, and a grass median in the center. The median would begin along the site's frontage at the northern end and extend south beyond the project site's border. All such improvements would comply with the City design standards to ensure compliance with all applicable policies and regulations. In addition, the proposed project is consistent with the uses in the vicinity, and would not introduce any incompatible uses. Thus, the project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment), and implementation of the project would result in a ***less-than-significant*** impact.

Question D

The proposed project would be required to comply with all building, fire, and safety codes and specific development plans would be subject to review and approval by the City's Public Works Department and the SFD. Required review by the aforementioned departments would ensure that the proposed circulation system for the project site would provide adequate emergency access. In addition, Section 12.20.030 of the City's Municipal Code requires that a construction traffic control plan be prepared and approved prior to the beginning of project construction, to the satisfaction of the City Traffic Engineer and subject to review by all affected agencies. All work performed during construction must conform to the conditions and requirements of the approved plan. The plan would ensure that safe and efficient movement of traffic through the construction work zone(s) is maintained. At a minimum, the plan must include the following:

- Time and day of street closures;
- Proper advance warning and posted signage regarding street closures;
- Provision of driveway access plan to ensure safe vehicular, pedestrian, and bicycle movements;
- Safe and efficient access routes for emergency vehicles;
- Provisions for pedestrian safety;
- Use of manual traffic control when necessary;
- Number of anticipated truck trips, and time of day of arrival and departure of trucks;
- Provision of a truck circulation pattern and staging area with a limitation on the number of trucks that can be waiting and any limitations on the size and type of trucks appropriate for the surrounding transportation network; and
- The plan must be available at the site for inspection by the City representative during all work.

With implementation of the aforementioned traffic control plan, local roadways and freeway facilities would continue to operate at acceptable operating conditions during construction, and the proposed project would not result in inadequate emergency access to the project site. Therefore, the implementation of the project would result in a ***less-than-significant*** impact.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Transportation and Circulation.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
14. TRIBAL CULTURAL RESOURCES Would the project: A) Cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe and that is: i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources code section 5020.1(k) or		X	
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X	

ENVIRONMENTAL AND REGULATORY SETTING

Please reference the Cultural Resources Chapter of the Master EIR for the Ethnohistory of the historic indigenous groups that occupied the region. This section focuses on the contemporary tribal communities and tribal cultural resources as they pertain to Assembly Bill (AB) 52.

This section analyzes and evaluates the potential impacts of the project on tribal cultural resources, both identified and undiscovered. Tribal cultural resources, as defined by AB 52, Statutes of 2014, in Public Resources Code (PRC) Section 21074, are sites, features, places, cultural landscapes, sacred places and objects, with cultural value to a Tribe. A Tribal cultural landscape is defined as a geographic area (including both cultural and natural resources and the wildlife therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

The unanticipated find of Native American human remains would also be considered a tribal cultural resource, and are therefore analyzed in this section.

The proposed project area is situated within the lands traditionally occupied by the Valley Nisenan, or Southern Maidu. Many descendants of Valley Nisenan throughout the larger Sacramento region belong to the United Auburn Indian Community, Shingle Springs, Ione Band, Colfax-Todds Valley, and Wilton Rancheria Tribes. The Tribes actively participate in the identification, evaluation, preservation, and restoration of tribal cultural resources.

Data Sources and Methodology

Under PRC Section 21080.3.1 and 21082.3, the City must consult with tribes traditionally and culturally affiliated with the project area that have requested formal notification and responded with a request for consultation. The parties must consult in good faith. Consultation is deemed concluded when the parties agree to measures to mitigate or avoid a significant effect on a tribal cultural resource when one is present or when a party concludes that mutual agreement cannot be reached. Mitigation measures agreed on during the consultation process must be recommended for inclusion in the environmental document.

Pursuant to AB 52, on June 25, 2021, notification of the project and an invitation for consultation was sent out to the tribes that have previously requested to receive such notification pursuant to PRC 20180.3.1 and AB 52. One tribe responded declining to consult and two tribes did not respond to the notification.

In response to the City's notification of the project to United Auburn Indian Community (UAIC), UAIC conducted a records search for the identification of tribal cultural resources for this project which included a review of pertinent literature and historic maps, and a records search using UAIC's Tribal Historic Information System (THRIS). UAIC's THRIS database is composed of UAIC's areas of oral history, ethnographic history, and places of cultural and religious significance, including UAIC Sacred Lands that are submitted to the Native American Heritage Commission (NAHC). The THRIS resources shown in this region also include previously recorded indigenous resources identified through the California Historic Resources Information System Center (CHRIS) as well as historic resources and survey data. For the subject project UAIC requested inadvertent discoveries mitigation be included then agreed to close consultation.

Federal Regulations

Federal plans, policies, or regulations related to tribal cultural resources that are directly applicable to the proposed project do not exist. However, Section 106 of the National Historic Preservation Act does require consultation with Native Americans to identify and consider certain types of cultural resources. Cultural resources of Native American origin identified as a result of the identification efforts conducted under Section 106 may also qualify as tribal cultural resources under CEQA.

State Regulations

- **California Environmental Quality Act:** CEQA requires that public agencies that finance or approve public or private projects must assess the effects of the project on tribal cultural resources. Tribal cultural resources are defined in PRC 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe that is (1) listed or determined eligible for listing on the California Register of Historical Resources (CRHR) or a local register, or (2) that are determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.
- **California PRC Section 5024:** PRC Section 5024.1 establishes the CRHR, which is the authoritative guide for identifying the State's historical resources to indicate what properties are to be protected, if feasible, from substantial adverse change. For a resource to be eligible for the CRHR, it must be more than 50 years old, retain its historic integrity, and satisfy one or more of the following criteria:

    1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
    2. Is associated with the lives of persons important in our past.
    3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

4. Has yielded, or may be likely to yield, information important in prehistory or history.

STANDARDS OF SIGNIFICANCE

For the purposes of this Initial Study, a tribal cultural resource is considered to be a significant resource if the resource is: 1) listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources; or 2) the resource has been determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. For purposes of this Initial Study, impacts on tribal cultural resources may be considered significant if construction and/or implementation of the proposed project would result in the following:

- Cause a substantial change in the significance of a tribal cultural resource as defined in Public Resources Code 21074.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR evaluated the potential effects of development under the 2035 General Plan on prehistoric and historic resources (see Master EIR Chapter 4.4 and Appendix C – Background Report, B. Cultural Resources Appendix), but did not specifically address tribal cultural resources because that resource type had not yet been defined in CEQA at the time the Master EIR was adopted. The Master EIR identified significant and unavoidable effects on historic resources and archaeological resources, some of which could be tribal cultural resources as defined PRC Section 21074. Ground-disturbing activities resulting from implementation of development under the 2035 General Plan could affect the integrity of an archaeological site (which may be a tribal cultural resource), thereby causing a substantial change in the significance of the resource. General plan policies identified as reducing such effects on cultural resources that may also be tribal cultural resources include identification of resources on project sites (Policy HCR 2.1.1); implementation of applicable laws and regulations (Policy HCR 2.1.2); consultation with appropriate organizations and individuals including the Native American Heritage Commission and implementation of their consultation guidelines (Policy HCR 2.1.3); enforcement programs to promote the maintenance, rehabilitation, preservation, and interpretation of the City's historic resources (Policy HCR 2.1.4); listing of qualified historic resources under appropriate national, State, and local registers (Policy HCR 2.1.5); consideration of historic and cultural resources in planning studies (Policy HCR 2.1.6); enforcement of compliance with local, State, and federal historic and cultural preservation requirements (Policy HCR 2.1.8); and early consultation with owners and land developers to minimize effects (Policy HCR 2.1.10).

Of particular relevance to this project are policies that ensure compliance with protocol that protect or mitigate impacts to archaeological resources (Policy HCR 2.1.16) and that encourage preservation and minimization of impacts on cultural resources (Policy HCR 2.1.17).

ANSWERS TO CHECKLIST QUESTIONS

<u>Questions A)i and A)ii</u>

As discussed in Section 4, Cultural Resources, of this IS/MND, the approximately 20.40-acre project site is currently undeveloped. The proposed project would include development of 177 two-story single-unit residences and two public parks, as well as a detention basin in the northwest corner of the project site. In addition, the proposed project would involve an internal roadway and a number of improvements to Rio Linda Boulevard.

Given that the project site has been regularly disturbed in the past through disking, surface tribal cultural resources are not anticipated to be found on-site during grading and construction activities. However, due to the predominant historic theme of the region as a whole, which includes thousands of years of occupation by Native American groups prior to non-Native peoples settling in the region, the possibility exists that unknown resources could be encountered during grading and excavation activities associated with development of the project. Therefore, the proposed project could have a potentially significant impact related to damaging or

destroying prehistoric cultural resources. However, with implementation of Mitigation Measures 13-1 through 13-3, the project would result in a ***less-than-significant impact with mitigation incorporated***.

MITIGATION MEASURES

Implementation of the following mitigation measures would reduce impacts related to tribal cultural resources to a *less-than-significant* level.

13-1 *Due to the cultural sensitivity of the project area, the following mitigation measure is intended to address the potential for buried tribal cultural resources (TCRs) that may be unearthed during ground disturbing activities.*

A minimum of seven days prior to beginning earthwork, clearing and grubbing, or other soil disturbing activities, the applicant shall notify lead agency of the proposed earthwork start-date. The lead agency shall contact the consulting Native American tribes (Tribes) with the proposed earthwork start-date and a Tribal Representative or Tribal Monitor shall be invited to inspect the project site, including any soil piles, trenches, or other disturbed areas, within the first five days of groundbreaking activity, or as appropriate for the type and size of project. During this inspection, a Tribal Representative or Tribal Monitor may provide an on-site meeting for construction personnel information on TCRs and workers awareness brochure.

If any TCRs are encountered during this initial inspection, or during any subsequent construction activities, work shall be suspended within 100 feet of the find and the measures included in the ***Inadvertent/Unanticipated Discoveries Mitigation Measure [MM 13-2]*** *shall be implemented.*

Preservation in place is the preferred alternative under CEQA and every effort must be made to preserve the resources in place, including through project redesign.

The contractor shall implement any measures deemed by CEQA lead agency (The City) to be necessary and feasible to preserve in place, avoid, or minimize significant effects to the resources, including the use of a paid Native American Monitor during ground disturbing activities.

13-2 ***In the Event that Tribal Cultural Resources are Discovered During Construction, Implement Procedures to Evaluate Tribal Cultural Resources and Implement Avoidance and Minimization Measures to Avoid Significant Impact.***

If archaeological resources, or tribal cultural resources, are encountered in the project area during construction, the following performance standards shall be met prior to continuance of construction and associated activities that may result in damage to or destruction of tribal cultural resources:

- *Each resource will be evaluated for California Register of Historical Resources (CRHR) eligibility through application of established eligibility criteria (California Code of Regulations 15064.636), in consultation with consulting Native American Tribes.*

If a tribal cultural resource is determined to be eligible for listing on the CRHR, the City will avoid damaging effects to the resource in accordance with California PRC Section 21084.3, if feasible. If the City determines that the project may cause a significant impact to a tribal cultural resource, and measures are not otherwise identified in the consultation process, the following are examples of mitigation capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to the resource. These measures may be considered to avoid or

minimize significant adverse impacts and constitute the standard by which an impact conclusion of less-than significant may be reached:

- *Avoid and preserve resources in place, including, but not limited to, planning construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.*
- *Treat the resource with culturally appropriate dignity taking into account the Tribal cultural values and meaning of the resource, including, but not limited to, the following:*
    - *Protect the cultural character and integrity of the resource.*
    - *Protect the traditional use of the resource.*
    - *Protect the confidentiality of the resource.*
    - *Establish permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or using the resources or places.*
    - *Rebury the resource in place.*
    - *Protect the resource.*

Avoidance and preservation in place is the preferred manner of mitigating impacts to tribal cultural resources and archaeological resources and will be accomplished, if feasible, by several alternative means, including:

- *Planning construction to avoid tribal cultural resources, archaeological sites and/or other resources; incorporating sites within parks, green-space or other open space; covering archaeological sites; deeding a site to a permanent conservation easement; or other preservation and protection methods agreeable to consulting parties and regulatory authorities with jurisdiction over the activity.*
- *Recommendations for avoidance of tribal cultural resources and Native American archaeological sites will be reviewed by the City representative, interested culturally affiliated Native American Tribes and other appropriate agencies, in light of factors such as costs, logistics, feasibility, design, technology and social, cultural and environmental considerations, and the extent to which avoidance is consistent with project objectives. Avoidance and design alternatives may include realignment within the project area to avoid cultural resources, modification of the design to eliminate or reduce impacts to cultural resources or modification or realignment to avoid highly significant features within a cultural resource.*
- *Native American Representatives from interested culturally affiliated Native American Tribes will be allowed to review and comment on these analyses and shall have the opportunity to meet with the City representative and its representatives who have technical expertise to identify and recommend feasible avoidance and design alternatives, so that appropriate and feasible avoidance and design alternatives can be identified.*
- *If the discovered resource can be avoided, the construction contractor(s), will install protective fencing outside the site boundary, including a 100-foot buffer area, before construction restarts. The boundary of a tribal cultural resource or a Native American archaeological site will be determined in consultation with interested culturally affiliated Native American Tribes and such Tribes will be invited to monitor the installation of fencing. Use of temporary and permanent forms of protective fencing will be determined in consultation with Native American Representatives from interested culturally affiliated Native American Tribes.*

- *The construction contractor(s) will maintain the protective fencing throughout construction to avoid the site during all remaining phases of construction. The area will be demarcated as an "Environmentally Sensitive Area".*
- *Native American Representatives from interested culturally affiliated Native American Tribes and the City representative will also consult to develop measures for long term management of any discovered tribal cultural resources. Consultation will be limited to actions consistent with the jurisdiction of the City and taking into account ownership of the subject property. To the extent that the City has jurisdiction, routine operation and maintenance within tribal cultural resources retaining tribal cultural integrity shall be consistent with the avoidance and minimization standards identified in this mitigation measure.*

To implement these avoidance and minimization standards, the following procedures shall be followed in the event of the discovery of a tribal cultural resource:

- *If any tribal archaeological resources or Native American materials, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or Native American architectural remains or articulated or disarticulated human remains are discovered on the project site, work shall be suspended within 100 feet of the find (based on the apparent distribution of cultural resources),and the construction contractor shall immediately notify the project's City representative.*
- *The City shall coordinate the investigation of the find with a qualified (meeting the Secretary of the Interior's Qualification Standards for Archaeology) archaeologist approved by the City and with one or more interested culturally affiliated Native American Tribes that respond to the City's invitation. As part of the site investigation and resource assessment, the City and the archaeologist shall consult with interested culturally affiliated Native American Tribes to assess the significance of the find, make recommendations for further evaluation and treatment as necessary and provide proper management recommendations should potential impacts to the resources be determined by the City to be significant. A written report detailing the site assessment, coordination activities, and management recommendations shall be provided to the City representative by the qualified archaeologist. These recommendations will be documented in the project record. For any recommendations made by interested culturally affiliated Native American Tribes which are not implemented, a justification for why the recommendation was not followed will be provided in the project record.*
- *The City shall consider management recommendations for tribal cultural resources, including Native American archaeological resources, that are deemed appropriate, including resource avoidance or, where avoidance is infeasible in light of project design or layout or is unnecessary to avoid significant effects, preservation in place or other measures. The contractor shall implement any measures deemed by the City to be necessary and feasible to avoid or minimize significant impacts to the cultural resources. These measures may include inviting an interested culturally affiliated Native American Tribe to monitor ground-disturbing activities whenever work is occurring within 100 feet of the location of a discovered tribal cultural resource or Native American archaeological site.*
- *If an adverse impact to tribal cultural resources, including Native American archaeological resources, occurs then consultation with interested culturally affiliated Tribes regarding mitigation contained in the Public Resources Code sections 21084.3(a) and (b) and CEQA Guidelines section 15370 shall occur, in order to identify mitigation for the impact.*

13-3 ***Implement Procedures in the Event of the Inadvertent Discovery of Native American Human Remains.***

If an inadvertent discovery of Native American human remains is made at any time during project-related construction activities or project planning, the City will implement the procedures listed above in Mitigation Measure 13-1. The following performance standards shall be met prior to implementing or continuing actions such as construction, that may result in damage to or destruction of human remains: In accordance with the California Health and Safety Code, if human remains are encountered during ground-disturbing activities, the City shall immediately halt potentially damaging excavation in the area of the burial and notify the Sacramento County Coroner and a professional archaeologist to determine the nature of the remains. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the Coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (California Health and Safety Code Section 7050[c]). After the Coroner's findings have been made, the archaeologist and the NAHC-designated Most Likely Descendant (MLD), in consultation with the landowner, shall determine the ultimate treatment and disposition of the remains. The responsibilities of the City for acting upon notification of a discovery of Native American human remains are identified in California PRC Section 5097.9 et seq.

If the human remains are of historic age and are determined to be not of Native American origin, the City will follow the provisions of the California Health and Safety Code Section 7000 (et seq.) regarding the disinterment and removal of non-Native American human remains.

FINDINGS

All additional significant environmental effects of the project relating to tribal cultural resources can be mitigated to a less-than-significant level.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
15. UTILITIES AND SERVICE SYSTEMS Would the project: A) Result in the determination that adequate capacity is not available to serve the project's demand in addition to existing commitments?			X
B) Require or result in either the construction of new utilities or the expansion of existing utilities, the construction of which could cause significant environmental impacts?			X

ENVIRONMENTAL SETTING

The existing utilities and service systems in the project vicinity are discussed below.

Wastewater

Wastewater collection and treatment services for the proposed project would be provided by the City of Sacramento Department of Utilities and the SRCSD. Wastewater generated from the project area is collected in the City's separated sewer system through a series of sewer pipes and flows into the SRCSD interceptor system, where the sewage is conveyed to the SRWWTP located near Elk Grove. The City's Department of Utilities is responsible for providing and maintaining the majority of the water, sewer collection, storm drainage, and flood control services for residents and businesses within City limits. The existing six-inch sewer line located on the west side of Rio Linda Boulevard is too small to serve the proposed project; therefore, the proposed project includes the addition of a ten-inch sewer line in Rio Linda Boulevard that would connect to an existing manhole at the intersection of Claire Avenue and Marysville Boulevard, to the south of the project site, which would then transport the wastewater through a ten-inch sewer line to an existing 48-inch sewer line located south of Rose Street. The on-site sewer system would connect to the sewer line in Rio Linda Boulevard through a network of eight-inch sewer lines. Potential project impacts related to storm drain infrastructure can be found in Section 8, Hydrology and Water Quality, of this IS/MND. A discussion of impacts related to wastewater, water supply, and solid waste can be found below.

Water Supply

To meet the City's water demand, the City uses surface water from the Sacramento and American rivers, and groundwater pumped from the North American and South American Subbasins. According to the City's 2020 Urban Water Management Plan (UWMP), the City has a current total of 333,200 acre-feet per year (AFY) in water supplies during dry years and expects the total to increase to 350,200 AFY by 2040. The total City retail water demand in 2020 was 100,483 AFY and is expected to increase to 132,942 AFY in 2045. According to the Department of Utilities' 2020 Consumer Confidence Report, the City's drinking water meets or exceeds all federal and State drinking water standards.[37] The project would connect to the proposed 12-inch water main located in Rio Linda Boulevard through a network of eight- to 12-inch water lines.

[37] City of Sacramento Department of Utilities. *2020 Consumer Confidence Report*. Available at: https://www.cityofsacramento.org/-/media/Corporate/Files/DOU/Reports/CCR_2020_Report_5_28_21_FINAL_WEB.pdf?la=en. Accessed January 2022.

Solid Waste Disposal

The City of Sacramento does not provide commercial solid waste collection services. Rather, commercial garbage, recycling, and yard waste services are provided by a franchised hauler authorized by the Sacramento Solid Waste Authority to collect commercial garbage and commingled recycling within the City. The Sacramento County Kiefer Landfill, located at 12701 Kiefer Boulevard in Sloughhouse, California, is the primary location for the disposal of waste for the City. According to the Master EIR, the Kiefer Landfill should serve the City adequately until the year 2065. As growth continues in the City, in accordance with the County General Plan and the City's General Plan, population would increase and the solid waste stream would continue to grow. However, implementation of the Solid Waste Authority and the Sacramento recycling requirements, would continue to significantly reduce potential cumulative impact on landfill capacity to a less-than-significant level.

STANDARDS OF SIGNIFICANCE

For the purposes of this Initial Study, an impact would be considered significant if the project resulted in the following:

- Result in the determination that adequate capacity is not available to serve the project's demand in addition to existing commitments; or
- Require or result in either the construction of new utilities or the expansion of existing utilities, the construction of which could cause significant environmental impacts.

SUMMARY OF ANALYSIS UNDER THE 2035 GENERAL PLAN MASTER EIR AND APPLICABLE GENERAL PLAN POLICIES

The Master EIR evaluated the effects of development under the 2035 General Plan on water supply, sewer and storm drainage, solid waste, electricity, natural gas and telecommunications. See Chapter 4.11.

The Master EIR evaluated the impacts of increased demand for water that would occur with development under the 2035 General Plan. Policies in the General Plan would reduce the impact generally to a less-than-significant level (see Impact 4.11-1) but the need for new water supply facilities results in a significant and unavoidable effect (Impact 4.11-2). The potential need for expansion of wastewater treatment facilities was identified as having a significant and unavoidable effect (Impacts 4.11-4, 4.11-5). Impacts on solid waste facilities were less than significant (Impacts 4.11-7, 4.11-8).

ANSWERS TO CHECKLIST QUESTIONS

<u>Questions A and B</u>

The project site is located adjacent to existing development, including single-unit development. The nearby developments are connected to the City's water and utilize existing solid waste disposal services, as well as SASD's wastewater services. The proposed project would connect to the existing water and sewer lines adjacent to the site.

Wastewater

As discussed above, the proposed project would be provided wastewater collection and treatment services by the City of Sacramento Department of Utilities and the SRCSD. Wastewater generated by the proposed project would be collected in the City's system. Each building on each lot would be required to have a separate connection to the sewer system. Multiple buildings located within a single parcel must have a separate connection to the public sewer line. Once collected, the sewage would flow into the SRCSD interceptor system, where the sewage would be conveyed to the SRWWTP.

As noted above, the proposed project would include a new ten-inch sewer line in Rio Linda Boulevard that would connect to an existing manhole at the intersection of Claire Avenue and Marysville Boulevard, to the

south of the project site, which would then transport the wastewater through a ten-inch sewer line to an existing 48-inch sewer line located south of Rose Street. The on-site sewer system would connect to the new sewer line in Rio Linda Boulevard through a network of eight-inch sewer lines. According to the Sewer Study prepared for the proposed project (see Appendix G), the dimensions of such sewer lines have been designed to have sufficient capacity to serve the project site and future development within the surrounding area.[38] The physical impacts associated with such sewer infrastructure have been addressed throughout this IS/MND.

Based on an average wastewater generation rate of 310 gallons per day per unit, the proposed project is anticipated to generate approximately 55,180 gallons per day, or 0.06 million gallons per day (mgd). The existing permitted capacity at the SRWWTP is 181 mgd.[39] Per the SRWWTP's NPDES Permit (No. CA0077682), adopted in April of 2016, the average dry weather flow at that time was approximately 120 mgd.[40] Therefore, adequate capacity exists to treat the additional 0.06 mgd of wastewater that would be generated by the proposed project.

Furthermore, the project would be generally consistent with the allowable uses for the site assumed in the General Plan. In addition, buildout capacity of the entire City service area was anticipated in the 2018-2019 Sewer System Management Plan (SSMP).[41] As such, the City has anticipated the need for wastewater services in the project area and requires development impact fees to support buildout demand of their service area (including the project site). Additionally, the SRCSD would require payment of sewer impact fees. All applicable impact fees would be required to be paid prior to issuance of a building permit.

Given the required payment of applicable impact fees, the SRCSD would be able to provide sufficient wastewater services and conveyance to serve full buildout of the City, including the project site, per the Master EIR. Therefore, adequate capacity exists to serve the project site's demands.

Water Supply

The City is responsible for providing and maintaining water service for the project site. The project would connect to an existing water main located just to the south of the project site. A new 12-inch water main would branch from the existing water main and run underneath Rio Linda Boulevard, which would then distribute water throughout the project site through a network of eight- to 12-inch water lines beneath the internal roadways. According to the Water Study prepared for the proposed project (see Appendix H), the dimensions of the existing and proposed water lines have been designed to have sufficient capacity to serve the project site and future development within the surrounding area, as well as comply with the City's fire flow requirements.[42] The physical impacts associated with such water infrastructure have been addressed throughout this IS/MND.

The 2020 UWMP analyzed the water supply, water demand, and water shortage contingency planning for the City's service area, which would include the project site. According to the 2020 UWMP, under all drought conditions, the City possesses sufficient water supply entitlements to meet the demands of the City's customers up to the year 2040.[43]

According to the 2020 UWMP, to obtain population projections for the year 2040, an assumption of a continued growth rate within the current service area and sphere of influence, consistent with the General

---

38 Baker-Williams Engineering Group. *Sewer Study, Robla Estates*. March 12, 2021.

39 Sacramento Regional Community Services District. *Final Executive Summary: Sacramento Regional Wastewater Treatment Plant*. May 2008.

40 California Regional Water Quality Control Board, Central Valley Region. *Order No. R5-2016-0020-01 NPDES No. CA0077682* [pg I-7]. April 2016.

41 Sacramento Area Sewer District. *Sewer System Management Plan.* October 18, 2021.

42 Baker-Williams Engineering Group. *Water Study, Robla Estates*. March 12, 2021.

43 City of Sacramento. *2020 Urban Water Management Plan*. Available at: https://www.cityofsacramento.org/-/media/Corporate/Files/DOU/Reports/Sacramento-2020-UWMP---Final-w-Ltr-of-Acceptance.pdf?la=en. Accessed January 2022.

Plan, was used. As a result, even though the project site was undeveloped at the time that the 2020 UWMP was prepared, the population growth associated with development of the site with residential uses was accounted for in the regional growth estimates. Thus, the population growth and increased demand in water associated with implementation of the proposed project was included within the growth projections evaluated in the 2020 UWMP.

As such, adequate capacity is expected to be available to serve the proposed project's water demands. The proposed project is generally consistent with land use and zoning designations and would not generate an increase in demand from what has already been anticipated in the Master EIR. As such, adequate capacity is expected to be available to serve the proposed project's water demands.

Solid Waste

Solid waste collected at residential uses in the area is currently disposed of at the Kiefer Landfill. Kiefer Landfill, located at 12701 Kiefer Boulevard in Sloughhouse, California, is the primary location for the disposal of waste by the City. According to the Master EIR, the landfill is permitted to accept up to 10,815 tons per day and the current peak and average daily disposal is substantially lower than the permitted amount. The landfill is anticipated to be capable of adequately serving the area, including the anticipated population growth, until the year 2065.

Per the CalRecycle Jurisdiction Diversion/Disposal Rate Summary for Sacramento, the most recently approved (2015) annual per capita disposal rate is 5.8 pounds per day per resident.[44] Given that the proposed project would house approximately 466 (2.63 persons per household x 177 residential units) future residents,[45] operation of the proposed project would generate approximately 2,703 pounds of waste per day (1.35 tons). Operational waste generation of 1.35 tons per day would equal approximately 0.01 percent of the Kiefer Landfill's remaining daily capacity. Therefore, the proposed project's operational waste generation could be accommodated by the existing capacity of the Kiefer Landfill.

Conclusion

Because adequate capacity exists to serve the project's demands in addition to existing commitments, and construction of new utilities or expansion of existing facilities would not result in significant environmental impacts, implementation of the proposed project would result in a ***less-than-significant*** impact.

MITIGATION MEASURES

None required.

FINDINGS

The project would have no additional project-specific environmental effects relating to Utilities and Service Systems.

[44] CalRecycle. *Jurisdiction Diversion/Disposal Rate Summary (2007 – Current).* Available at: https://www2.calrecycle.ca.gov/LGCentral/DiversionProgram/JurisdictionDiversionPost2006. Accessed January 2022.

[45] United States Census Bureau. *Sacramento City, California Quick Facts.* Available at: https://www.census.gov/quickfacts/sacramentocitycalifornia. Accessed March 2022.

Issues:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact
16. MANDATORY FINDINGS OF SIGNIFICANCE A) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X	
B) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)		X	
C) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X	

ANSWERS TO CHECKLIST QUESTIONS

Question A

Implementation of the proposed project would have the potential to adversely impact special-status animals and previously undiscovered cultural, tribal cultural resources, and/or human remains. The proposed project would implement and comply with applicable Sacramento 2035 General Plan policies, as discussed throughout this IS/MND. With implementation of the mitigation measures required by this IS/MND, compliance with 2035 General Plan policies, and application of standard BMPs during construction, development of the proposed project would not result in any of the following: 1) degrade the quality of the environment; 2) substantially reduce or impact the habitat of fish or wildlife species; 3) cause fish or wildlife populations to drop below self-sustaining levels; 4) threaten to eliminate a plant or animal community; 5) reduce the number or restrict the range of a rare or endangered plant or animal; or 6) eliminate important examples of the major periods of California history or prehistory. Therefore, with implementation of the mitigation measures included in this IS/MND, the project would result in a ***less-than-significant impact with mitigation incorporated.***

Question B

Although the proposed project would require a General Plan Amendment, the current land use designation and the designation following approval of the General Plan Amendment are both residential in nature. Buildout of the project site under the existing land use designations could result in approximately 285 residents. Under the proposed land use designation, buildout of the project site would result in an increase in population of approximately 181 new residents from what could occur under the existing land use designations. Such an increase in population resulting from buildout of the project under the proposed land use designation would generally be within the projections for buildout of the North Sacramento area considered in the General Plan and would not be considered substantial unplanned population growth beyond what was previously analyzed in the Master EIR. Thus, the population growth associated with

development of the proposed project was generally accounted for in the regional population growth projection evaluated in the City's 2035 General Plan EIR. Therefore, the population growth associated with development of the project was included in the cumulative analysis of City buildout in the Master EIR. Similarly, the project site was anticipated for residential development in the General Plan, and therefore the disturbance area analyzed under the previous land use designation in the Master EIR remains the same. Applicable policies from the 2035 General Plan would be implemented as part of the proposed project, as well as the project-specific mitigation measures included in this IS/MND, to reduce the proposed project's contribution to potentially cumulative impacts. The potential impacts of the proposed project would be individually limited and would not be cumulatively considerable. As demonstrated in this IS/MND, all potential environmental impacts that could occur as a result of project implementation would be reduced to a less-than-significant level with implementation of project-specific mitigation measures and compliance with applicable 2035 General Plan policies. When viewed in conjunction with other closely related past, present or reasonably foreseeable future projects, development of the proposed project would not contribute to cumulative impacts in the City. Therefore, with implementation of the mitigation measures included in this IS/MND, the project would result in a ***less-than-significant impact with mitigation incorporated.***

Question C

Implementation of the proposed project could result in temporary impacts related to hazards during the construction period. The proposed project would be required to implement the project-specific mitigation measures within this IS/MND, as well as applicable policies of the 2035 General Plan, to reduce any potential direct or indirect impacts that could occur to human beings or various resources and, as demonstrated in this IS/MND, with implementation of the identified mitigation measures, all impacts would be reduced to less-than-significant levels. Therefore, with implementation of the mitigation measures included in this IS/MND, the project would result in a ***less-than-significant impact with mitigation incorporated.***

SECTION IV - ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would potentially be affected by this project.

	Aesthetics		Hazards
X	Air Quality		Noise
X	Biological Resources		Public Services
X	Cultural Resources		Recreation
	Energy and Mineral Resources	X	Transportation/Circulation
X	Geology and Soils	X	Tribal Cultural Resources
	Hydrology and Water Quality		Utilities and Service Systems
	None Identified		

SECTION V - DETERMINATION

On the basis of the initial study:

I find that (a) the proposed project is an anticipated subsequent project identified and described in the 2035 General Plan Master EIR; (b) the proposed project is consistent with the 2035 General Plan land use designation and the permissible densities and intensities of use for the project site; (c) that the discussions of cumulative impacts, growth inducing impacts, and irreversible significant effects in the Master EIR are adequate for the proposed project; and (d) the proposed project will have additional significant environmental effects not previously examined in the Master EIR. A Mitigated Negative Declaration will be prepared. Mitigation measures from the Master EIR will be applied to the project as appropriate, and additional feasible mitigation measures and alternatives will be incorporated to revise the proposed project before the negative declaration is circulated for public review, to avoid or mitigate the identified effects to a level of insignificance. (CEQA Guidelines Section 15178(b))

Scott Johnson
Signature

August 3, 2022
Date

Type text here

Scott Johnson, Senior Planner
Printed Name

REFERENCES CITED

It should be noted that all of the technical reports used for the purposes of the analysis throughout this Initial Study are available upon request to staff at the City of Sacramento Community Development Department located at 300 Richards Boulevard, Third Floor, Sacramento, CA 95811. The following documents are referenced information sources used for the analysis within this Initial Study:

1. Baker-Williams Engineering Group. *Sewer Study, Robla Estates*. March 12, 2021.
2. Baker-Williams Engineering Group. *Water Study, Robla Estates*. February 2021.
3. California Department of Conservation. *California Important Farmland Finder*. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed December 2021.
4. California Department of Forestry and Fire Protection. *Fire Hazard Severity Zones Maps.* Available at: https://egis.fire.ca.gov/FHSZ/. Accessed December 2021.
5. California Department of Transportation. *California Scenic Highway Mapping System, Sacramento County.* Available at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=2e921695c43643b1aaf7000dfcc19983. Accessed December 2021.
6. California Department of Transportation. *Transportation and Construction Vibration Guidance Manual*. September 2013.
7. California Regional Water Quality Control Board, Central Valley Region. *Order No. R5-2016-0020-01 NPDES No. CA0077682*. April 2016.
8. CalRecycle. *Jurisdiction Diversion/Disposal Rate Summary (2007 – Current).* Available at: https://www2.calrecycle.ca.gov/LGCentral/DiversionProgram/JurisdictionDiversionPost2006. Accessed January 2022.
9. City of Sacramento Department of Utilities. *2020 Consumer Confidence Report*. Available at: https://www.cityofsacramento.org/-/media/Corporate/Files/DOU/Reports/CCR_2020_Report_5_28_21_FINAL_WEB.pdf?la=en. Accessed January 2022.
10. City of Sacramento. *2020 Urban Water Management Plan*. Available at: https://www.cityofsacramento.org/-/media/Corporate/Files/DOU/Reports/Sacramento-2020-UWMP---Final-w-Ltr-of-Acceptance.pdf?la=en. Accessed January 2022.
11. Dario Gotchet, Principal Consultant, Bollard Acoustical Consultants, Inc. Personal Communication [email] with Angela DaRosa, Division Manager of Raney Planning and Management, Inc. April 4, 2022.
12. Department of Toxic Substances Control. *EnviroStor*. Available at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Natomas%2C+California. Accessed January 2022.
13. DKS Associates. *VMT Analysis*. April 1, 2022.
14. ENGEO Incorporated. *Geotechnical Exploration Shehadeh Property, Sacramento, California.* December 17, 2005. Revised March 30, 2006.
15. Federal Highway Administration. *Roadway Construction Noise Model User's Guide.* January 2006.
16. Jeff Glazner, Principal, Salix Consulting, Inc. *Addendum letter addressing proposed outfall into Robla Creek Corridor*. May 23, 2022.
17. Lush Geosciences Incorporated. *Phase I Environmental Assessment Robla Village Property*. January 16, 2020.
18. Metro Fire Sacramento. *About Us*. Available at: https://metrofire.ca.gov/about-us. Accessed January 2022.
19. Office of Environmental Health Hazard Assessment. *Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments* [pg. 8-18]. February 2015.
20. Chew, Greg, Senior Planner, Sacramento Area Council of Governments. Personal Communication [email] with Quitanilla, Jose, Associate Planner, City of Sacramento. July 8, 2021.
21. Regional San. *Impact Fees.* Available at: https://www.regionalsan.com/impact-fees-businesses. Accessed January 2022.

22. Robertson, Mike, Baker Williams Engineering. Personal Communication [email] with Marco Gabbiani, Swift Developments. July 11, 2022.
23. Robla School District. *About the District*. Available at: https://www.robla.k12.ca.us/apps/pages/index.jsp?uREC_ID=568832&type=d&pREC_ID=1065810. Accessed January 2022.
24. Sacramento Area Sewer District. *Sewer Ordinance SDI-0072*. Effective May 27, 2016.
25. Sacramento Area Sewer District. *Sewer System Management Plan.* October 18, 2021.
26. Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment, Chapter 4: Operational Criteria Air Pollutant and Precursor Emissions*. June 2020.
27. Sacramento Metropolitan Air Quality Management District. *SMAQMD Operational Screening Levels*. April 2018.
28. Sacramento Regional Community Services District. *Final Executive Summary: Sacramento Regional Wastewater Treatment Plant* [pg 7]. May 2008.
29. Salix Consulting Inc. *Biological Resources Assessment for the Robla Estates Study Area.* June 2020.
30. Salix Consulting Inc. *Wetland Delineation for the Robla Estates Study Area.* June 2020.
31. Twin Rivers Unified School District. *About.* Available at: https://www.twinriversusd.org/About/index.html. Accessed January 2022.
32. U.S. Environmental Protection Agency. *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*. December 2016.
33. United States Census Bureau. *Sacramento City, California Quick Facts.* Available at: https://www.census.gov/quickfacts/sacramentocitycalifornia. Accessed March 2022.
34. West Yost. *Robla Estates Preliminary Basin Sizing.* April 2021.

APPENDIX A
CALEEMOD MODELING RESULTS

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Robla Estates Project

Sacramento Metropolitan AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.03	Acre	5.03	219,106.80	0
City Park	2.06	Acre	2.06	89,733.60	0
Single Family Housing	177.00	Dwelling Unit	13.34	318,600.00	473

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	357.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreages adjusted to match site plan.

Construction Phase - Phase timing based on applicant-provided questionnaire.

Grading -

Vehicle Trips - Trip generation rates updated based on project-specific traffic study (DKS 2022).

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation - Outdoor water conservation strategy applied to reflect compliance with MWELO.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	720.00
tblConstructionPhase	NumDays	370.00	720.00
tblConstructionPhase	NumDays	35.00	30.00
tblConstructionPhase	NumDays	20.00	4.00
tblConstructionPhase	NumDays	10.00	4.00
tblLandUse	LotAcreage	57.47	13.34
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	9.54	8.95
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	8.55	8.95
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	9.44	8.95

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.3432	1.4386	1.4066	3.1700e-003	0.2547	0.0622	0.3170	0.0959	0.0581	0.1540	0.0000	283.7520	283.7520	0.0534	8.6400e-003	287.6636
2023	1.0587	2.5365	3.1840	7.5400e-003	0.2748	0.1037	0.3785	0.0743	0.0982	0.1725	0.0000	681.0126	681.0126	0.0835	0.0298	691.9924
2024	1.0459	2.4069	3.1450	7.5000e-003	0.2769	0.0918	0.3687	0.0749	0.0868	0.1617	0.0000	678.6093	678.6093	0.0829	0.0293	689.4120
2025	0.5227	1.0909	1.4983	3.5900e-003	0.1346	0.0384	0.1730	0.0364	0.0363	0.0727	0.0000	325.1143	325.1143	0.0395	0.0138	330.1989
Maximum	**1.0587**	**2.5365**	**3.1840**	**7.5400e-003**	**0.2769**	**0.1037**	**0.3785**	**0.0959**	**0.0982**	**0.1725**	**0.0000**	**681.0126**	**681.0126**	**0.0835**	**0.0298**	**691.9924**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.3432	1.4386	1.4066	3.1700e-003	0.2547	0.0622	0.3170	0.0959	0.0581	0.1540	0.0000	283.7518	283.7518	0.0534	8.6400e-003	287.6634
2023	1.0587	2.5365	3.1840	7.5400e-003	0.2748	0.1037	0.3785	0.0743	0.0982	0.1725	0.0000	681.0122	681.0122	0.0835	0.0298	691.9920
2024	1.0459	2.4069	3.1450	7.5000e-003	0.2769	0.0918	0.3687	0.0749	0.0868	0.1617	0.0000	678.6089	678.6089	0.0829	0.0293	689.4116
2025	0.5227	1.0909	1.4983	3.5900e-003	0.1346	0.0384	0.1730	0.0364	0.0363	0.0727	0.0000	325.1141	325.1141	0.0395	0.0138	330.1987
Maximum	**1.0587**	**2.5365**	**3.1840**	**7.5400e-003**	**0.2769**	**0.1037**	**0.3785**	**0.0959**	**0.0982**	**0.1725**	**0.0000**	**681.0122**	**681.0122**	**0.0835**	**0.0298**	**691.9920**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2022**	**10-31-2022**	1.1154	1.1154
2	**11-1-2022**	**1-31-2023**	0.9628	0.9628
3	**2-1-2023**	**4-30-2023**	0.8812	0.8812
4	**5-1-2023**	**7-31-2023**	0.9058	0.9058
5	**8-1-2023**	**10-31-2023**	0.9084	0.9084
6	**11-1-2023**	**1-31-2024**	0.8991	0.8991
7	**2-1-2024**	**4-30-2024**	0.8493	0.8493
8	**5-1-2024**	**7-31-2024**	0.8631	0.8631

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

9	**8-1-2024**	**10-31-2024**	0.8656	0.8656
10	**11-1-2024**	**1-31-2025**	0.8561	0.8561
11	**2-1-2025**	**4-30-2025**	0.7981	0.7981
12	**5-1-2025**	**7-31-2025**	0.5347	0.5347
		Highest	1.1154	1.1154

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.5165	0.0210	1.8237	1.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	2.9818	2.9818	2.8600e-003	0.0000	3.0532
Energy	0.0226	0.1930	0.0821	1.2300e-003		0.0156	0.0156		0.0156	0.0156	0.0000	450.7309	450.7309	0.0252	6.6400e-003	453.3394
Mobile	0.7377	0.9416	6.7521	0.0141	1.5065	0.0112	1.5176	0.4027	0.0104	0.4132	0.0000	1,340.1428	1,340.1428	0.0904	0.0655	1,361.9190
Waste						0.0000	0.0000		0.0000	0.0000	34.6018	0.0000	34.6018	2.0449	0.0000	85.7246
Water						0.0000	0.0000		0.0000	0.0000	4.0801	14.8571	18.9372	0.0154	9.0400e-003	22.0161
Total	**2.2767**	**1.1555**	**8.6579**	**0.0155**	**1.5065**	**0.0369**	**1.5434**	**0.4027**	**0.0362**	**0.4389**	**38.6820**	**1,808.7127**	**1,847.3947**	**2.1788**	**0.0812**	**1,926.0523**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.5165	0.0210	1.8237	1.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	2.9818	2.9818	2.8600e-003	0.0000	3.0532
Energy	0.0226	0.1930	0.0821	1.2300e-003		0.0156	0.0156		0.0156	0.0156	0.0000	450.7309	450.7309	0.0252	6.6400e-003	453.3394
Mobile	0.7312	0.9270	6.6487	0.0139	1.4763	0.0110	1.4873	0.3947	0.0103	0.4049	0.0000	1,314.1418	1,314.1418	0.0893	0.0645	1,335.5905
Waste						0.0000	0.0000		0.0000	0.0000	34.6018	0.0000	34.6018	2.0449	0.0000	85.7246
Water						0.0000	0.0000		0.0000	0.0000	4.0801	13.7517	17.8319	0.0153	9.0300e-003	20.9046
Total	**2.2703**	**1.1410**	**8.5545**	**0.0152**	**1.4763**	**0.0367**	**1.5130**	**0.3947**	**0.0360**	**0.4306**	**38.6820**	**1,781.6063**	**1,820.2883**	**2.1776**	**0.0802**	**1,898.6123**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.28**	**1.26**	**1.19**	**1.81**	**2.00**	**0.54**	**1.97**	**2.00**	**0.50**	**1.88**	**0.00**	**1.50**	**1.47**	**0.06**	**1.24**	**1.42**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/4/2022	5	4	
2	Grading	Grading	8/5/2022	9/15/2022	5	30	
3	Paving	Paving	9/16/2022	9/21/2022	5	4	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	9/22/2022	6/25/2025	5	720	
5	Architectural Coating	Architectural Coating	10/6/2022	7/9/2025	5	720	

Acres of Grading (Site Preparation Phase): 6

Acres of Grading (Grading Phase): 90

Acres of Paving: 5.03

Residential Indoor: 645,165; Residential Outdoor: 215,055; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 13,146 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	193.00	70.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	39.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0393	0.0000	0.0393	0.0202	0.0000	0.0202	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3400e-003	0.0662	0.0394	8.0000e-005		3.2300e-003	3.2300e-003		2.9700e-003	2.9700e-003	0.0000	6.6879	6.6879	2.1600e-003	0.0000	6.7420
Total	**6.3400e-003**	**0.0662**	**0.0394**	**8.0000e-005**	**0.0393**	**3.2300e-003**	**0.0425**	**0.0202**	**2.9700e-003**	**0.0232**	**0.0000**	**6.6879**	**6.6879**	**2.1600e-003**	**0.0000**	**6.7420**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	7.0000e-005	9.1000e-004	0.0000	2.6000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2177	0.2177	1.0000e-005	1.0000e-005	0.2199
Total	**1.1000e-004**	**7.0000e-005**	**9.1000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**2.7000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2177**	**0.2177**	**1.0000e-005**	**1.0000e-005**	**0.2199**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0393	0.0000	0.0393	0.0202	0.0000	0.0202	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3400e-003	0.0662	0.0394	8.0000e-005		3.2300e-003	3.2300e-003		2.9700e-003	2.9700e-003	0.0000	6.6879	6.6879	2.1600e-003	0.0000	6.7419
Total	**6.3400e-003**	**0.0662**	**0.0394**	**8.0000e-005**	**0.0393**	**3.2300e-003**	**0.0425**	**0.0202**	**2.9700e-003**	**0.0232**	**0.0000**	**6.6879**	**6.6879**	**2.1600e-003**	**0.0000**	**6.7419**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	7.0000e-005	9.1000e-004	0.0000	2.6000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2177	0.2177	1.0000e-005	1.0000e-005	0.2199
Total	**1.1000e-004**	**7.0000e-005**	**9.1000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**2.7000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2177**	**0.2177**	**1.0000e-005**	**1.0000e-005**	**0.2199**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1381	0.0000	0.1381	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8019	81.8019	0.0265	0.0000	82.4633
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1381**	**0.0245**	**0.1626**	**0.0548**	**0.0226**	**0.0774**	**0.0000**	**81.8019**	**81.8019**	**0.0265**	**0.0000**	**82.4633**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	6.0000e-004	7.5700e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2200e-003	5.9000e-004	1.0000e-005	6.0000e-004	0.0000	1.8143	1.8143	6.0000e-005	5.0000e-005	1.8321
Total	**9.2000e-004**	**6.0000e-004**	**7.5700e-003**	**2.0000e-005**	**2.2000e-003**	**1.0000e-005**	**2.2200e-003**	**5.9000e-004**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**1.8143**	**1.8143**	**6.0000e-005**	**5.0000e-005**	**1.8321**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1381	0.0000	0.1381	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8018	81.8018	0.0265	0.0000	82.4632
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1381**	**0.0245**	**0.1626**	**0.0548**	**0.0226**	**0.0774**	**0.0000**	**81.8018**	**81.8018**	**0.0265**	**0.0000**	**82.4632**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	6.0000e-004	7.5700e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2200e-003	5.9000e-004	1.0000e-005	6.0000e-004	0.0000	1.8143	1.8143	6.0000e-005	5.0000e-005	1.8321
Total	**9.2000e-004**	**6.0000e-004**	**7.5700e-003**	**2.0000e-005**	**2.2000e-003**	**1.0000e-005**	**2.2200e-003**	**5.9000e-004**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**1.8143**	**1.8143**	**6.0000e-005**	**5.0000e-005**	**1.8321**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2100e-003	0.0223	0.0292	5.0000e-005		1.1400e-003	1.1400e-003		1.0400e-003	1.0400e-003	0.0000	4.0055	4.0055	1.3000e-003	0.0000	4.0379
Paving	6.5900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.8000e-003**	**0.0223**	**0.0292**	**5.0000e-005**		**1.1400e-003**	**1.1400e-003**		**1.0400e-003**	**1.0400e-003**	**0.0000**	**4.0055**	**4.0055**	**1.3000e-003**	**0.0000**	**4.0379**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	7.6000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1814	0.1814	1.0000e-005	1.0000e-005	0.1832
Total	**9.0000e-005**	**6.0000e-005**	**7.6000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1814**	**0.1814**	**1.0000e-005**	**1.0000e-005**	**0.1832**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2100e-003	0.0223	0.0292	5.0000e-005		1.1400e-003	1.1400e-003		1.0400e-003	1.0400e-003	0.0000	4.0055	4.0055	1.3000e-003	0.0000	4.0379
Paving	6.5900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.8000e-003**	**0.0223**	**0.0292**	**5.0000e-005**		**1.1400e-003**	**1.1400e-003**		**1.0400e-003**	**1.0400e-003**	**0.0000**	**4.0055**	**4.0055**	**1.3000e-003**	**0.0000**	**4.0379**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	7.6000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1814	0.1814	1.0000e-005	1.0000e-005	0.1832
Total	**9.0000e-005**	**6.0000e-005**	**7.6000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1814**	**0.1814**	**1.0000e-005**	**1.0000e-005**	**0.1832**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0614	0.5622	0.5891	9.7000e-004		0.0291	0.0291		0.0274	0.0274	0.0000	83.4211	83.4211	0.0200	0.0000	83.9207
Total	**0.0614**	**0.5622**	**0.5891**	**9.7000e-004**		**0.0291**	**0.0291**		**0.0274**	**0.0274**	**0.0000**	**83.4211**	**83.4211**	**0.0200**	**0.0000**	**83.9207**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3700e-003	0.1446	0.0421	5.0000e-004	0.0148	1.3400e-003	0.0161	4.2600e-003	1.2800e-003	5.5400e-003	0.0000	48.3758	48.3758	1.2600e-003	7.0900e-003	50.5208
Worker	0.0214	0.0139	0.1753	4.6000e-004	0.0510	2.9000e-004	0.0513	0.0136	2.6000e-004	0.0138	0.0000	42.0196	42.0196	1.4300e-003	1.2600e-003	42.4323
Total	**0.0268**	**0.1586**	**0.2174**	**9.6000e-004**	**0.0658**	**1.6300e-003**	**0.0674**	**0.0178**	**1.5400e-003**	**0.0194**	**0.0000**	**90.3954**	**90.3954**	**2.6900e-003**	**8.3500e-003**	**92.9531**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0614	0.5622	0.5891	9.7000e-004		0.0291	0.0291		0.0274	0.0274	0.0000	83.4210	83.4210	0.0200	0.0000	83.9206
Total	**0.0614**	**0.5622**	**0.5891**	**9.7000e-004**		**0.0291**	**0.0291**		**0.0274**	**0.0274**	**0.0000**	**83.4210**	**83.4210**	**0.0200**	**0.0000**	**83.9206**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3700e-003	0.1446	0.0421	5.0000e-004	0.0148	1.3400e-003	0.0161	4.2600e-003	1.2800e-003	5.5400e-003	0.0000	48.3758	48.3758	1.2600e-003	7.0900e-003	50.5208
Worker	0.0214	0.0139	0.1753	4.6000e-004	0.0510	2.9000e-004	0.0513	0.0136	2.6000e-004	0.0138	0.0000	42.0196	42.0196	1.4300e-003	1.2600e-003	42.4323
Total	**0.0268**	**0.1586**	**0.2174**	**9.6000e-004**	**0.0658**	**1.6300e-003**	**0.0674**	**0.0178**	**1.5400e-003**	**0.0194**	**0.0000**	**90.3954**	**90.3954**	**2.6900e-003**	**8.3500e-003**	**92.9531**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0119	0.4436	0.1337	1.7300e-003	0.0533	2.3600e-003	0.0556	0.0154	2.2600e-003	0.0177	0.0000	168.7771	168.7771	4.1600e-003	0.0248	176.2611
Worker	0.0720	0.0445	0.5849	1.5900e-003	0.1843	9.8000e-004	0.1853	0.0490	9.1000e-004	0.0499	0.0000	147.8256	147.8256	4.6800e-003	4.2200e-003	149.2015
Total	**0.0838**	**0.4881**	**0.7187**	**3.3200e-003**	**0.2375**	**3.3400e-003**	**0.2409**	**0.0644**	**3.1700e-003**	**0.0676**	**0.0000**	**316.6026**	**316.6026**	**8.8400e-003**	**0.0290**	**325.4626**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0119	0.4436	0.1337	1.7300e-003	0.0533	2.3600e-003	0.0556	0.0154	2.2600e-003	0.0177	0.0000	168.7771	168.7771	4.1600e-003	0.0248	176.2611
Worker	0.0720	0.0445	0.5849	1.5900e-003	0.1843	9.8000e-004	0.1853	0.0490	9.1000e-004	0.0499	0.0000	147.8256	147.8256	4.6800e-003	4.2200e-003	149.2015
Total	**0.0838**	**0.4881**	**0.7187**	**3.3200e-003**	**0.2375**	**3.3400e-003**	**0.2409**	**0.0644**	**3.1700e-003**	**0.0676**	**0.0000**	**316.6026**	**316.6026**	**8.8400e-003**	**0.0290**	**325.4626**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0114	0.4381	0.1306	1.7100e-003	0.0537	2.3500e-003	0.0560	0.0155	2.2400e-003	0.0178	0.0000	166.8452	166.8452	4.0800e-003	0.0245	174.2588
Worker	0.0678	0.0399	0.5486	1.5500e-003	0.1857	9.4000e-004	0.1866	0.0494	8.7000e-004	0.0503	0.0000	145.2443	145.2443	4.2700e-003	3.9600e-003	146.5308
Total	**0.0793**	**0.4781**	**0.6792**	**3.2600e-003**	**0.2394**	**3.2900e-003**	**0.2427**	**0.0649**	**3.1100e-003**	**0.0680**	**0.0000**	**312.0895**	**312.0895**	**8.3500e-003**	**0.0285**	**320.7896**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0114	0.4381	0.1306	1.7100e-003	0.0537	2.3500e-003	0.0560	0.0155	2.2400e-003	0.0178	0.0000	166.8452	166.8452	4.0800e-003	0.0245	174.2588
Worker	0.0678	0.0399	0.5486	1.5500e-003	0.1857	9.4000e-004	0.1866	0.0494	8.7000e-004	0.0503	0.0000	145.2443	145.2443	4.2700e-003	3.9600e-003	146.5308
Total	**0.0793**	**0.4781**	**0.6792**	**3.2600e-003**	**0.2394**	**3.2900e-003**	**0.2427**	**0.0649**	**3.1100e-003**	**0.0680**	**0.0000**	**312.0895**	**312.0895**	**8.3500e-003**	**0.0285**	**320.7896**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0862	0.7856	1.0133	1.7000e-003		0.0332	0.0332		0.0313	0.0313	0.0000	146.1093	146.1093	0.0344	0.0000	146.9679
Total	**0.0862**	**0.7856**	**1.0133**	**1.7000e-003**		**0.0332**	**0.0332**		**0.0313**	**0.0313**	**0.0000**	**146.1093**	**146.1093**	**0.0344**	**0.0000**	**146.9679**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3000e-003	0.2064	0.0613	8.1000e-004	0.0258	1.1100e-003	0.0269	7.4600e-003	1.0600e-003	8.5200e-003	0.0000	78.6152	78.6152	1.9200e-003	0.0116	82.1146
Worker	0.0306	0.0172	0.2468	7.2000e-004	0.0893	4.3000e-004	0.0897	0.0238	4.0000e-004	0.0242	0.0000	68.1610	68.1610	1.8700e-003	1.7800e-003	68.7381
Total	**0.0359**	**0.2237**	**0.3081**	**1.5300e-003**	**0.1151**	**1.5400e-003**	**0.1167**	**0.0312**	**1.4600e-003**	**0.0327**	**0.0000**	**146.7763**	**146.7763**	**3.7900e-003**	**0.0134**	**150.8527**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0862	0.7856	1.0133	1.7000e-003		0.0332	0.0332		0.0313	0.0313	0.0000	146.1091	146.1091	0.0344	0.0000	146.9677
Total	**0.0862**	**0.7856**	**1.0133**	**1.7000e-003**		**0.0332**	**0.0332**		**0.0313**	**0.0313**	**0.0000**	**146.1091**	**146.1091**	**0.0344**	**0.0000**	**146.9677**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3000e-003	0.2064	0.0613	8.1000e-004	0.0258	1.1100e-003	0.0269	7.4600e-003	1.0600e-003	8.5200e-003	0.0000	78.6152	78.6152	1.9200e-003	0.0116	82.1146
Worker	0.0306	0.0172	0.2468	7.2000e-004	0.0893	4.3000e-004	0.0897	0.0238	4.0000e-004	0.0242	0.0000	68.1610	68.1610	1.8700e-003	1.7800e-003	68.7381
Total	**0.0359**	**0.2237**	**0.3081**	**1.5300e-003**	**0.1151**	**1.5400e-003**	**0.1167**	**0.0312**	**1.4600e-003**	**0.0327**	**0.0000**	**146.7763**	**146.7763**	**3.7900e-003**	**0.0134**	**150.8527**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1743					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3400e-003	0.0437	0.0562	9.0000e-005		2.5300e-003	2.5300e-003		2.5300e-003	2.5300e-003	0.0000	7.9151	7.9151	5.2000e-004	0.0000	7.9280
Total	**0.1806**	**0.0437**	**0.0562**	**9.0000e-005**		**2.5300e-003**	**2.5300e-003**		**2.5300e-003**	**2.5300e-003**	**0.0000**	**7.9151**	**7.9151**	**5.2000e-004**	**0.0000**	**7.9280**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7200e-003	2.4300e-003	0.0305	8.0000e-005	8.8800e-003	5.0000e-005	8.9300e-003	2.3600e-003	5.0000e-005	2.4100e-003	0.0000	7.3117	7.3117	2.5000e-004	2.2000e-004	7.3835
Total	**3.7200e-003**	**2.4300e-003**	**0.0305**	**8.0000e-005**	**8.8800e-003**	**5.0000e-005**	**8.9300e-003**	**2.3600e-003**	**5.0000e-005**	**2.4100e-003**	**0.0000**	**7.3117**	**7.3117**	**2.5000e-004**	**2.2000e-004**	**7.3835**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1743					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3400e-003	0.0437	0.0562	9.0000e-005		2.5300e-003	2.5300e-003		2.5300e-003	2.5300e-003	0.0000	7.9151	7.9151	5.2000e-004	0.0000	7.9280
Total	**0.1806**	**0.0437**	**0.0562**	**9.0000e-005**		**2.5300e-003**	**2.5300e-003**		**2.5300e-003**	**2.5300e-003**	**0.0000**	**7.9151**	**7.9151**	**5.2000e-004**	**0.0000**	**7.9280**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7200e-003	2.4300e-003	0.0305	8.0000e-005	8.8800e-003	5.0000e-005	8.9300e-003	2.3600e-003	5.0000e-005	2.4100e-003	0.0000	7.3117	7.3117	2.5000e-004	2.2000e-004	7.3835
Total	**3.7200e-003**	**2.4300e-003**	**0.0305**	**8.0000e-005**	**8.8800e-003**	**5.0000e-005**	**8.9300e-003**	**2.3600e-003**	**5.0000e-005**	**2.4100e-003**	**0.0000**	**7.3117**	**7.3117**	**2.5000e-004**	**2.2000e-004**	**7.3835**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7309					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1694	0.2355	3.9000e-004		9.2100e-003	9.2100e-003		9.2100e-003	9.2100e-003	0.0000	33.1923	33.1923	1.9900e-003	0.0000	33.2419
Total	**0.7558**	**0.1694**	**0.2355**	**3.9000e-004**		**9.2100e-003**	**9.2100e-003**		**9.2100e-003**	**9.2100e-003**	**0.0000**	**33.1923**	**33.1923**	**1.9900e-003**	**0.0000**	**33.2419**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0145	8.9900e-003	0.1182	3.2000e-004	0.0372	2.0000e-004	0.0374	9.9000e-003	1.8000e-004	0.0101	0.0000	29.8715	29.8715	9.5000e-004	8.5000e-004	30.1495
Total	**0.0145**	**8.9900e-003**	**0.1182**	**3.2000e-004**	**0.0372**	**2.0000e-004**	**0.0374**	**9.9000e-003**	**1.8000e-004**	**0.0101**	**0.0000**	**29.8715**	**29.8715**	**9.5000e-004**	**8.5000e-004**	**30.1495**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7309					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1694	0.2354	3.9000e-004		9.2100e-003	9.2100e-003		9.2100e-003	9.2100e-003	0.0000	33.1923	33.1923	1.9900e-003	0.0000	33.2419
Total	**0.7558**	**0.1694**	**0.2354**	**3.9000e-004**		**9.2100e-003**	**9.2100e-003**		**9.2100e-003**	**9.2100e-003**	**0.0000**	**33.1923**	**33.1923**	**1.9900e-003**	**0.0000**	**33.2419**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0145	8.9900e-003	0.1182	3.2000e-004	0.0372	2.0000e-004	0.0374	9.9000e-003	1.8000e-004	0.0101	0.0000	29.8715	29.8715	9.5000e-004	8.5000e-004	30.1495
Total	**0.0145**	**8.9900e-003**	**0.1182**	**3.2000e-004**	**0.0372**	**2.0000e-004**	**0.0374**	**9.9000e-003**	**1.8000e-004**	**0.0101**	**0.0000**	**29.8715**	**29.8715**	**9.5000e-004**	**8.5000e-004**	**30.1495**

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7365					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1597	0.2371	3.9000e-004		7.9800e-003	7.9800e-003		7.9800e-003	7.9800e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**0.7602**	**0.1597**	**0.2371**	**3.9000e-004**		**7.9800e-003**	**7.9800e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0137	8.0700e-003	0.1109	3.1000e-004	0.0375	1.9000e-004	0.0377	9.9800e-003	1.8000e-004	0.0102	0.0000	29.3499	29.3499	8.6000e-004	8.0000e-004	29.6099
Total	**0.0137**	**8.0700e-003**	**0.1109**	**3.1000e-004**	**0.0375**	**1.9000e-004**	**0.0377**	**9.9800e-003**	**1.8000e-004**	**0.0102**	**0.0000**	**29.3499**	**29.3499**	**8.6000e-004**	**8.0000e-004**	**29.6099**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7365					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1597	0.2371	3.9000e-004		7.9800e-003	7.9800e-003		7.9800e-003	7.9800e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**0.7602**	**0.1597**	**0.2371**	**3.9000e-004**		**7.9800e-003**	**7.9800e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0137	8.0700e-003	0.1109	3.1000e-004	0.0375	1.9000e-004	0.0377	9.9800e-003	1.8000e-004	0.0102	0.0000	29.3499	29.3499	8.6000e-004	8.0000e-004	29.6099
Total	**0.0137**	**8.0700e-003**	**0.1109**	**3.1000e-004**	**0.0375**	**1.9000e-004**	**0.0377**	**9.9800e-003**	**1.8000e-004**	**0.0102**	**0.0000**	**29.3499**	**29.3499**	**8.6000e-004**	**8.0000e-004**	**29.6099**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3823					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0116	0.0779	0.1230	2.0000e-004		3.5000e-003	3.5000e-003		3.5000e-003	3.5000e-003	0.0000	17.3621	17.3621	9.5000e-004	0.0000	17.3858
Total	**0.3939**	**0.0779**	**0.1230**	**2.0000e-004**		**3.5000e-003**	**3.5000e-003**		**3.5000e-003**	**3.5000e-003**	**0.0000**	**17.3621**	**17.3621**	**9.5000e-004**	**0.0000**	**17.3858**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6800e-003	3.7600e-003	0.0538	1.6000e-004	0.0195	9.0000e-005	0.0196	5.1800e-003	9.0000e-005	5.2700e-003	0.0000	14.8666	14.8666	4.1000e-004	3.9000e-004	14.9925
Total	**6.6800e-003**	**3.7600e-003**	**0.0538**	**1.6000e-004**	**0.0195**	**9.0000e-005**	**0.0196**	**5.1800e-003**	**9.0000e-005**	**5.2700e-003**	**0.0000**	**14.8666**	**14.8666**	**4.1000e-004**	**3.9000e-004**	**14.9925**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3823					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0116	0.0779	0.1230	2.0000e-004		3.5000e-003	3.5000e-003		3.5000e-003	3.5000e-003	0.0000	17.3621	17.3621	9.5000e-004	0.0000	17.3858
Total	**0.3939**	**0.0779**	**0.1230**	**2.0000e-004**		**3.5000e-003**	**3.5000e-003**		**3.5000e-003**	**3.5000e-003**	**0.0000**	**17.3621**	**17.3621**	**9.5000e-004**	**0.0000**	**17.3858**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6800e-003	3.7600e-003	0.0538	1.6000e-004	0.0195	9.0000e-005	0.0196	5.1800e-003	9.0000e-005	5.2700e-003	0.0000	14.8666	14.8666	4.1000e-004	3.9000e-004	14.9925
Total	**6.6800e-003**	**3.7600e-003**	**0.0538**	**1.6000e-004**	**0.0195**	**9.0000e-005**	**0.0196**	**5.1800e-003**	**9.0000e-005**	**5.2700e-003**	**0.0000**	**14.8666**	**14.8666**	**4.1000e-004**	**3.9000e-004**	**14.9925**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7312	0.9270	6.6487	0.0139	1.4763	0.0110	1.4873	0.3947	0.0103	0.4049	0.0000	1,314.1418	1,314.1418	0.0893	0.0645	1,335.5905
Unmitigated	0.7377	0.9416	6.7521	0.0141	1.5065	0.0112	1.5176	0.4027	0.0104	0.4132	0.0000	1,340.1428	1,340.1428	0.0904	0.0655	1,361.9190

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,584.15	1,584.15	1584.15	4,065,102	3,983,800
Total	1,584.15	1,584.15	1,584.15	4,065,102	3,983,800

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	10.00	5.00	6.50	33.00	48.00	19.00	66	28	6
Other Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Single Family Housing	10.00	5.00	6.50	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207
Other Asphalt Surfaces	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Single Family Housing	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	227.2642	227.2642	0.0210	2.5400e-003	228.5446
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	227.2642	227.2642	0.0210	2.5400e-003	228.5446
NaturalGas Mitigated	0.0226	0.1930	0.0821	1.2300e-003		0.0156	0.0156		0.0156	0.0156	0.0000	223.4668	223.4668	4.2800e-003	4.1000e-003	224.7947
NaturalGas Unmitigated	0.0226	0.1930	0.0821	1.2300e-003		0.0156	0.0156		0.0156	0.0156	0.0000	223.4668	223.4668	4.2800e-003	4.1000e-003	224.7947

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.18761e+006	0.0226	0.1930	0.0821	1.2300e-003		0.0156	0.0156		0.0156	0.0156	0.0000	223.4668	223.4668	4.2800e-003	4.1000e-003	224.7947
Total		**0.0226**	**0.1930**	**0.0821**	**1.2300e-003**		**0.0156**	**0.0156**		**0.0156**	**0.0156**	**0.0000**	**223.4668**	**223.4668**	**4.2800e-003**	**4.1000e-003**	**224.7947**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.18761e+006	0.0226	0.1930	0.0821	1.2300e-003		0.0156	0.0156		0.0156	0.0156	0.0000	223.4668	223.4668	4.2800e-003	4.1000e-003	224.7947
Total		**0.0226**	**0.1930**	**0.0821**	**1.2300e-003**		**0.0156**	**0.0156**		**0.0156**	**0.0156**	**0.0000**	**223.4668**	**223.4668**	**4.2800e-003**	**4.1000e-003**	**224.7947**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.39961e+006	227.2642	0.0210	2.5400e-003	228.5446
Total		**227.2642**	**0.0210**	**2.5400e-003**	**228.5446**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.39961e+006	227.2642	0.0210	2.5400e-003	228.5446
Total		**227.2642**	**0.0210**	**2.5400e-003**	**228.5446**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5165	0.0210	1.8237	1.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	2.9818	2.9818	2.8600e-003	0.0000	3.0532
Unmitigated	1.5165	0.0210	1.8237	1.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	2.9818	2.9818	2.8600e-003	0.0000	3.0532

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2024					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2593					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0548	0.0210	1.8237	1.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	2.9818	2.9818	2.8600e-003	0.0000	3.0532
Total	**1.5165**	**0.0210**	**1.8237**	**1.0000e-004**		**0.0101**	**0.0101**		**0.0101**	**0.0101**	**0.0000**	**2.9818**	**2.9818**	**2.8600e-003**	**0.0000**	**3.0532**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2024					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2593					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0548	0.0210	1.8237	1.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	2.9818	2.9818	2.8600e-003	0.0000	3.0532
Total	**1.5165**	**0.0210**	**1.8237**	**1.0000e-004**		**0.0101**	**0.0101**		**0.0101**	**0.0101**	**0.0000**	**2.9818**	**2.9818**	**2.8600e-003**	**0.0000**	**3.0532**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	17.8319	0.0153	9.0300e-003	20.9046
Unmitigated	18.9372	0.0154	9.0400e-003	22.0161

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.45445	1.3949	1.3000e-004	2.0000e-005	1.4028
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11.5323 / 7.27034	17.5423	0.0153	9.0200e-003	20.6134
Total		**18.9372**	**0.0154**	**9.0400e-003**	**22.0161**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.96356	1.1159	1.0000e-004	1.0000e-005	1.1222
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11.5323 / 5.81627	16.7159	0.0152	9.0100e-003	19.7823
Total		**17.8319**	**0.0153**	**9.0200e-003**	**20.9046**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	34.6018	2.0449	0.0000	85.7246
Unmitigated	34.6018	2.0449	0.0000	85.7246

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.18	0.0365	2.1600e-003	0.0000	0.0905
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	170.28	34.5653	2.0428	0.0000	85.6341
Total		**34.6018**	**2.0449**	**0.0000**	**85.7246**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.18	0.0365	2.1600e-003	0.0000	0.0905
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	170.28	34.5653	2.0428	0.0000	85.6341
Total		**34.6018**	**2.0449**	**0.0000**	**85.7246**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Robla Estates Project

Sacramento Metropolitan AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.03	Acre	5.03	219,106.80	0
City Park	2.06	Acre	2.06	89,733.60	0
Single Family Housing	177.00	Dwelling Unit	13.34	318,600.00	473

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	357.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreages adjusted to match site plan.

Construction Phase - Phase timing based on applicant-provided questionnaire.

Grading -

Vehicle Trips - Trip generation rates updated based on project-specific traffic study (DKS 2022).

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation - Outdoor water conservation strategy applied to reflect compliance with MWELO.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	720.00
tblConstructionPhase	NumDays	370.00	720.00
tblConstructionPhase	NumDays	35.00	30.00
tblConstructionPhase	NumDays	20.00	4.00
tblConstructionPhase	NumDays	10.00	4.00
tblLandUse	LotAcreage	57.47	13.34
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	9.54	8.95
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	8.55	8.95
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	9.44	8.95

2.0 Emissions Summary

Robla Estates Project - Sacramento Metropolitan AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	8.5251	38.8801	29.6330	0.0635	19.7939	1.6357	21.4073	10.1388	1.5049	11.6230	0.0000	6,157.5609	6,157.5609	1.9486	0.2607	6,207.4001
2023	8.2621	19.3048	25.3868	0.0594	2.1866	0.7978	2.9843	0.5895	0.7549	1.3445	0.0000	5,918.4888	5,918.4888	0.7054	0.2503	6,010.7024
2024	8.0944	18.1741	24.8236	0.0586	2.1865	0.7007	2.8872	0.5895	0.6629	1.2524	0.0000	5,850.0956	5,850.0956	0.6955	0.2439	5,940.1725
2025	7.9325	17.0278	24.3272	0.0578	2.1865	0.6048	2.7913	0.5895	0.5721	1.1616	0.0000	5,783.1270	5,783.1270	0.6870	0.2377	5,871.1310
Maximum	**8.5251**	**38.8801**	**29.6330**	**0.0635**	**19.7939**	**1.6357**	**21.4073**	**10.1388**	**1.5049**	**11.6230**	**0.0000**	**6,157.5609**	**6,157.5609**	**1.9486**	**0.2607**	**6,207.4001**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	8.5251	38.8801	29.6330	0.0635	19.7939	1.6357	21.4073	10.1388	1.5049	11.6230	0.0000	6,157.5609	6,157.5609	1.9486	0.2607	6,207.4001
2023	8.2621	19.3048	25.3868	0.0594	2.1866	0.7978	2.9843	0.5895	0.7549	1.3445	0.0000	5,918.4888	5,918.4888	0.7054	0.2503	6,010.7024
2024	8.0944	18.1741	24.8236	0.0586	2.1865	0.7007	2.8872	0.5895	0.6629	1.2524	0.0000	5,850.0956	5,850.0956	0.6955	0.2439	5,940.1725
2025	7.9325	17.0278	24.3272	0.0578	2.1865	0.6048	2.7913	0.5895	0.5721	1.1616	0.0000	5,783.1270	5,783.1270	0.6870	0.2377	5,871.1310
Maximum	**8.5251**	**38.8801**	**29.6330**	**0.0635**	**19.7939**	**1.6357**	**21.4073**	**10.1388**	**1.5049**	**11.6230**	**0.0000**	**6,157.5609**	**6,157.5609**	**1.9486**	**0.2607**	**6,207.4001**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249
Energy	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Mobile	4.9924	4.7638	39.9784	0.0835	8.5705	0.0615	8.6320	2.2847	0.0574	2.3421		8,719.8464	8,719.8464	0.5225	0.3809	8,846.4092
Total	**13.5635**	**5.9892**	**55.0180**	**0.0910**	**8.5705**	**0.2279**	**8.7984**	**2.2847**	**0.2239**	**2.5086**	**0.0000**	**10,095.8949**	**10,095.8949**	**0.5735**	**0.4056**	**10,231.1082**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249
Energy	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Mobile	4.9571	4.6909	39.3244	0.0818	8.3991	0.0604	8.4595	2.2390	0.0564	2.2954		8,550.2509	8,550.2509	0.5153	0.3751	8,674.8987
Total	**13.5283**	**5.9163**	**54.3640**	**0.0893**	**8.3991**	**0.2268**	**8.6259**	**2.2390**	**0.2228**	**2.4618**	**0.0000**	**9,926.2994**	**9,926.2994**	**0.5663**	**0.3998**	**10,059.5978**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.26**	**1.22**	**1.19**	**1.79**	**2.00**	**0.48**	**1.96**	**2.00**	**0.46**	**1.86**	**0.00**	**1.68**	**1.68**	**1.26**	**1.43**	**1.68**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/4/2022	5	4	
2	Grading	Grading	8/5/2022	9/15/2022	5	30	
3	Paving	Paving	9/16/2022	9/21/2022	5	4	
4	Building Construction	Building Construction	9/22/2022	6/25/2025	5	720	
5	Architectural Coating	Architectural Coating	10/6/2022	7/9/2025	5	720	

Acres of Grading (Site Preparation Phase): 6

Acres of Grading (Grading Phase): 90

Acres of Paving: 5.03

Residential Indoor: 645,165; Residential Outdoor: 215,055; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 13,146 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	193.00	70.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	39.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0652	0.0329	0.5324	1.2900e-003	0.1369	7.4000e-004	0.1377	0.0363	6.8000e-004	0.0370		131.5353	131.5353	3.9000e-003	3.4000e-003	132.6458
Total	**0.0652**	**0.0329**	**0.5324**	**1.2900e-003**	**0.1369**	**7.4000e-004**	**0.1377**	**0.0363**	**6.8000e-004**	**0.0370**		**131.5353**	**131.5353**	**3.9000e-003**	**3.4000e-003**	**132.6458**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0652	0.0329	0.5324	1.2900e-003	0.1369	7.4000e-004	0.1377	0.0363	6.8000e-004	0.0370		131.5353	131.5353	3.9000e-003	3.4000e-003	132.6458
Total	**0.0652**	**0.0329**	**0.5324**	**1.2900e-003**	**0.1369**	**7.4000e-004**	**0.1377**	**0.0363**	**6.8000e-004**	**0.0370**		**131.5353**	**131.5353**	**3.9000e-003**	**3.4000e-003**	**132.6458**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0725	0.0366	0.5915	1.4400e-003	0.1521	8.3000e-004	0.1530	0.0404	7.6000e-004	0.0411		146.1503	146.1503	4.3400e-003	3.7800e-003	147.3843
Total	**0.0725**	**0.0366**	**0.5915**	**1.4400e-003**	**0.1521**	**8.3000e-004**	**0.1530**	**0.0404**	**7.6000e-004**	**0.0411**		**146.1503**	**146.1503**	**4.3400e-003**	**3.7800e-003**	**147.3843**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0725	0.0366	0.5915	1.4400e-003	0.1521	8.3000e-004	0.1530	0.0404	7.6000e-004	0.0411		146.1503	146.1503	4.3400e-003	3.7800e-003	147.3843
Total	**0.0725**	**0.0366**	**0.5915**	**1.4400e-003**	**0.1521**	**8.3000e-004**	**0.1530**	**0.0404**	**7.6000e-004**	**0.0411**		**146.1503**	**146.1503**	**4.3400e-003**	**3.7800e-003**	**147.3843**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	3.2947					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3975**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0544	0.0275	0.4436	1.0800e-003	0.1141	6.2000e-004	0.1147	0.0303	5.7000e-004	0.0308		109.6128	109.6128	3.2500e-003	2.8300e-003	110.5382
Total	**0.0544**	**0.0275**	**0.4436**	**1.0800e-003**	**0.1141**	**6.2000e-004**	**0.1147**	**0.0303**	**5.7000e-004**	**0.0308**		**109.6128**	**109.6128**	**3.2500e-003**	**2.8300e-003**	**110.5382**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	3.2947					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3975**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0544	0.0275	0.4436	1.0800e-003	0.1141	6.2000e-004	0.1147	0.0303	5.7000e-004	0.0308		109.6128	109.6128	3.2500e-003	2.8300e-003	110.5382
Total	**0.0544**	**0.0275**	**0.4436**	**1.0800e-003**	**0.1141**	**6.2000e-004**	**0.1147**	**0.0303**	**5.7000e-004**	**0.0308**		**109.6128**	**109.6128**	**3.2500e-003**	**2.8300e-003**	**110.5382**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1515	3.8130	1.1480	0.0138	0.4218	0.0370	0.4588	0.1214	0.0354	0.1568		1,481.3340	1,481.3340	0.0387	0.2169	1,546.9476
Worker	0.6993	0.3531	5.7082	0.0139	1.4682	7.9700e-003	1.4761	0.3894	7.3400e-003	0.3968		1,410.3507	1,410.3507	0.0419	0.0365	1,422.2582
Total	**0.8508**	**4.1661**	**6.8562**	**0.0277**	**1.8899**	**0.0450**	**1.9349**	**0.5108**	**0.0428**	**0.5536**		**2,891.6847**	**2,891.6847**	**0.0806**	**0.2534**	**2,969.2058**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1515	3.8130	1.1480	0.0138	0.4218	0.0370	0.4588	0.1214	0.0354	0.1568		1,481.3340	1,481.3340	0.0387	0.2169	1,546.9476
Worker	0.6993	0.3531	5.7082	0.0139	1.4682	7.9700e-003	1.4761	0.3894	7.3400e-003	0.3968		1,410.3507	1,410.3507	0.0419	0.0365	1,422.2582
Total	**0.8508**	**4.1661**	**6.8562**	**0.0277**	**1.8899**	**0.0450**	**1.9349**	**0.5108**	**0.0428**	**0.5536**		**2,891.6847**	**2,891.6847**	**0.0806**	**0.2534**	**2,969.2058**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0937	3.2413	1.0090	0.0133	0.4217	0.0181	0.4398	0.1214	0.0173	0.1387		1,430.6895	1,430.6895	0.0354	0.2097	1,494.0696
Worker	0.6503	0.3125	5.2598	0.0134	1.4682	7.5700e-003	1.4757	0.3894	6.9700e-003	0.3964		1,373.5788	1,373.5788	0.0377	0.0337	1,384.5734
Total	**0.7440**	**3.5537**	**6.2689**	**0.0268**	**1.8899**	**0.0257**	**1.9156**	**0.5108**	**0.0243**	**0.5351**		**2,804.2683**	**2,804.2683**	**0.0731**	**0.2435**	**2,878.6430**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0937	3.2413	1.0090	0.0133	0.4217	0.0181	0.4398	0.1214	0.0173	0.1387		1,430.6895	1,430.6895	0.0354	0.2097	1,494.0696
Worker	0.6503	0.3125	5.2598	0.0134	1.4682	7.5700e-003	1.4757	0.3894	6.9700e-003	0.3964		1,373.5788	1,373.5788	0.0377	0.0337	1,384.5734
Total	**0.7440**	**3.5537**	**6.2689**	**0.0268**	**1.8899**	**0.0257**	**1.9156**	**0.5108**	**0.0243**	**0.5351**		**2,804.2683**	**2,804.2683**	**0.0731**	**0.2435**	**2,878.6430**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0896	3.1769	0.9774	0.0131	0.4217	0.0178	0.4395	0.1214	0.0171	0.1384		1,403.4422	1,403.4422	0.0344	0.2062	1,465.7501
Worker	0.6075	0.2784	4.8826	0.0130	1.4682	7.2100e-003	1.4754	0.3894	6.6400e-003	0.3961		1,338.9429	1,338.9429	0.0341	0.0314	1,349.1453
Total	**0.6971**	**3.4553**	**5.8600**	**0.0261**	**1.8898**	**0.0250**	**1.9149**	**0.5108**	**0.0237**	**0.5345**		**2,742.3851**	**2,742.3851**	**0.0684**	**0.2376**	**2,814.8954**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0896	3.1769	0.9774	0.0131	0.4217	0.0178	0.4395	0.1214	0.0171	0.1384		1,403.4422	1,403.4422	0.0344	0.2062	1,465.7501
Worker	0.6075	0.2784	4.8826	0.0130	1.4682	7.2100e-003	1.4754	0.3894	6.6400e-003	0.3961		1,338.9429	1,338.9429	0.0341	0.0314	1,349.1453
Total	**0.6971**	**3.4553**	**5.8600**	**0.0261**	**1.8898**	**0.0250**	**1.9149**	**0.5108**	**0.0237**	**0.5345**		**2,742.3851**	**2,742.3851**	**0.0684**	**0.2376**	**2,814.8954**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0864	3.1123	0.9545	0.0128	0.4216	0.0175	0.4391	0.1214	0.0167	0.1381		1,374.9839	1,374.9839	0.0337	0.2024	1,436.1420
Worker	0.5703	0.2499	4.5579	0.0125	1.4682	6.8900e-003	1.4750	0.3894	6.3400e-003	0.3958		1,306.2612	1,306.2612	0.0308	0.0294	1,315.7767
Total	**0.6567**	**3.3622**	**5.5124**	**0.0254**	**1.8898**	**0.0244**	**1.9142**	**0.5108**	**0.0231**	**0.5339**		**2,681.2450**	**2,681.2450**	**0.0645**	**0.2318**	**2,751.9187**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0864	3.1123	0.9545	0.0128	0.4216	0.0175	0.4391	0.1214	0.0167	0.1381		1,374.9839	1,374.9839	0.0337	0.2024	1,436.1420
Worker	0.5703	0.2499	4.5579	0.0125	1.4682	6.8900e-003	1.4750	0.3894	6.3400e-003	0.3958		1,306.2612	1,306.2612	0.0308	0.0294	1,315.7767
Total	**0.6567**	**3.3622**	**5.5124**	**0.0254**	**1.8898**	**0.0244**	**1.9142**	**0.5108**	**0.0231**	**0.5339**		**2,681.2450**	**2,681.2450**	**0.0645**	**0.2318**	**2,751.9187**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**5.8268**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1413	0.0714	1.1535	2.8000e-003	0.2967	1.6100e-003	0.2983	0.0787	1.4800e-003	0.0802		284.9932	284.9932	8.4600e-003	7.3600e-003	287.3993
Total	**0.1413**	**0.0714**	**1.1535**	**2.8000e-003**	**0.2967**	**1.6100e-003**	**0.2983**	**0.0787**	**1.4800e-003**	**0.0802**		**284.9932**	**284.9932**	**8.4600e-003**	**7.3600e-003**	**287.3993**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**5.8268**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1413	0.0714	1.1535	2.8000e-003	0.2967	1.6100e-003	0.2983	0.0787	1.4800e-003	0.0802		284.9932	284.9932	8.4600e-003	7.3600e-003	287.3993
Total	**0.1413**	**0.0714**	**1.1535**	**2.8000e-003**	**0.2967**	**1.6100e-003**	**0.2983**	**0.0787**	**1.4800e-003**	**0.0802**		**284.9932**	**284.9932**	**8.4600e-003**	**7.3600e-003**	**287.3993**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**5.8140**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1314	0.0631	1.0629	2.7100e-003	0.2967	1.5300e-003	0.2982	0.0787	1.4100e-003	0.0801		277.5626	277.5626	7.6200e-003	6.8200e-003	279.7843
Total	**0.1314**	**0.0631**	**1.0629**	**2.7100e-003**	**0.2967**	**1.5300e-003**	**0.2982**	**0.0787**	**1.4100e-003**	**0.0801**		**277.5626**	**277.5626**	**7.6200e-003**	**6.8200e-003**	**279.7843**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**5.8140**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1314	0.0631	1.0629	2.7100e-003	0.2967	1.5300e-003	0.2982	0.0787	1.4100e-003	0.0801		277.5626	277.5626	7.6200e-003	6.8200e-003	279.7843
Total	**0.1314**	**0.0631**	**1.0629**	**2.7100e-003**	**0.2967**	**1.5300e-003**	**0.2982**	**0.0787**	**1.4100e-003**	**0.0801**		**277.5626**	**277.5626**	**7.6200e-003**	**6.8200e-003**	**279.7843**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**5.8031**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1228	0.0563	0.9866	2.6200e-003	0.2967	1.4600e-003	0.2981	0.0787	1.3400e-003	0.0800		270.5636	270.5636	6.8800e-003	6.3400e-003	272.6252
Total	**0.1228**	**0.0563**	**0.9866**	**2.6200e-003**	**0.2967**	**1.4600e-003**	**0.2981**	**0.0787**	**1.3400e-003**	**0.0800**		**270.5636**	**270.5636**	**6.8800e-003**	**6.3400e-003**	**272.6252**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**5.8031**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1228	0.0563	0.9866	2.6200e-003	0.2967	1.4600e-003	0.2981	0.0787	1.3400e-003	0.0800		270.5636	270.5636	6.8800e-003	6.3400e-003	272.6252
Total	**0.1228**	**0.0563**	**0.9866**	**2.6200e-003**	**0.2967**	**1.4600e-003**	**0.2981**	**0.0787**	**1.3400e-003**	**0.0800**		**270.5636**	**270.5636**	**6.8800e-003**	**6.3400e-003**	**272.6252**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.7932**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1152	0.0505	0.9210	2.5300e-003	0.2967	1.3900e-003	0.2981	0.0787	1.2800e-003	0.0800		263.9595	263.9595	6.2300e-003	5.9300e-003	265.8823
Total	**0.1152**	**0.0505**	**0.9210**	**2.5300e-003**	**0.2967**	**1.3900e-003**	**0.2981**	**0.0787**	**1.2800e-003**	**0.0800**		**263.9595**	**263.9595**	**6.2300e-003**	**5.9300e-003**	**265.8823**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.7932**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1152	0.0505	0.9210	2.5300e-003	0.2967	1.3900e-003	0.2981	0.0787	1.2800e-003	0.0800		263.9595	263.9595	6.2300e-003	5.9300e-003	265.8823
Total	**0.1152**	**0.0505**	**0.9210**	**2.5300e-003**	**0.2967**	**1.3900e-003**	**0.2981**	**0.0787**	**1.2800e-003**	**0.0800**		**263.9595**	**263.9595**	**6.2300e-003**	**5.9300e-003**	**265.8823**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.9571	4.6909	39.3244	0.0818	8.3991	0.0604	8.4595	2.2390	0.0564	2.2954		8,550.2509	8,550.2509	0.5153	0.3751	8,674.8987
Unmitigated	4.9924	4.7638	39.9784	0.0835	8.5705	0.0615	8.6320	2.2847	0.0574	2.3421		8,719.8464	8,719.8464	0.5225	0.3809	8,846.4092

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,584.15	1,584.15	1584.15	4,065,102	3,983,800
Total	1,584.15	1,584.15	1,584.15	4,065,102	3,983,800

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	10.00	5.00	6.50	33.00	48.00	19.00	66	28	6
Other Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Single Family Housing	10.00	5.00	6.50	46.50	12.50	41.00	86	11	3

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207
Other Asphalt Surfaces	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207
Single Family Housing	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
NaturalGas Unmitigated	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11472.9	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Total		**0.1237**	**1.0573**	**0.4499**	**6.7500e-003**		**0.0855**	**0.0855**		**0.0855**	**0.0855**		**1,349.7532**	**1,349.7532**	**0.0259**	**0.0248**	**1,357.7741**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11.4729	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Total		**0.1237**	**1.0573**	**0.4499**	**6.7500e-003**		**0.0855**	**0.0855**		**0.0855**	**0.0855**		**1,349.7532**	**1,349.7532**	**0.0259**	**0.0248**	**1,357.7741**

6.0 Area Detail

6.1 Mitigation Measures Area

Robla Estates Project - Sacramento Metropolitan AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249
Unmitigated	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1091					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.9003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4381	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810		26.2953	26.2953	0.0252		26.9249
Total	**8.4474**	**0.1681**	**14.5896**	**7.7000e-004**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**26.2953**	**26.2953**	**0.0252**	**0.0000**	**26.9249**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1091					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.9003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4381	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810		26.2953	26.2953	0.0252		26.9249
Total	**8.4474**	**0.1681**	**14.5896**	**7.7000e-004**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**26.2953**	**26.2953**	**0.0252**	**0.0000**	**26.9249**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Robla Estates Project

Sacramento Metropolitan AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.03	Acre	5.03	219,106.80	0
City Park	2.06	Acre	2.06	89,733.60	0
Single Family Housing	177.00	Dwelling Unit	13.34	318,600.00	473

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	357.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreages adjusted to match site plan.

Construction Phase - Phase timing based on applicant-provided questionnaire.

Grading -

Vehicle Trips - Trip generation rates updated based on project-specific traffic study (DKS 2022).

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation - Outdoor water conservation strategy applied to reflect compliance with MWELO.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	720.00
tblConstructionPhase	NumDays	370.00	720.00
tblConstructionPhase	NumDays	35.00	30.00
tblConstructionPhase	NumDays	20.00	4.00
tblConstructionPhase	NumDays	10.00	4.00
tblLandUse	LotAcreage	57.47	13.34
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	9.54	8.95
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	8.55	8.95
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	9.44	8.95

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	8.4247	38.8884	29.5539	0.0634	19.7939	1.6357	21.4073	10.1388	1.5049	11.6230	0.0000	6,141.3666	6,141.3666	1.9492	0.2676	6,191.3878
2023	8.1696	19.6324	24.6168	0.0576	2.1866	0.7980	2.9845	0.5895	0.7551	1.3446	0.0000	5,737.1142	5,737.1142	0.7121	0.2567	5,831.4205
2024	8.0091	18.4884	24.1354	0.0569	2.1865	0.7009	2.8874	0.5895	0.6630	1.2526	0.0000	5,673.9490	5,673.9490	0.7018	0.2499	5,765.9715
2025	7.8529	17.3303	23.7049	0.0562	2.1865	0.6050	2.7915	0.5895	0.5723	1.1618	0.0000	5,611.8455	5,611.8455	0.6929	0.2433	5,701.6686
Maximum	**8.4247**	**38.8884**	**29.5539**	**0.0634**	**19.7939**	**1.6357**	**21.4073**	**10.1388**	**1.5049**	**11.6230**	**0.0000**	**6,141.3666**	**6,141.3666**	**1.9492**	**0.2676**	**6,191.3878**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	8.4247	38.8884	29.5539	0.0634	19.7939	1.6357	21.4073	10.1388	1.5049	11.6230	0.0000	6,141.3666	6,141.3666	1.9492	0.2676	6,191.3878
2023	8.1696	19.6324	24.6168	0.0576	2.1866	0.7980	2.9845	0.5895	0.7551	1.3446	0.0000	5,737.1142	5,737.1142	0.7121	0.2567	5,831.4205
2024	8.0091	18.4884	24.1354	0.0569	2.1865	0.7009	2.8874	0.5895	0.6630	1.2526	0.0000	5,673.9490	5,673.9490	0.7018	0.2499	5,765.9715
2025	7.8529	17.3303	23.7049	0.0562	2.1865	0.6050	2.7915	0.5895	0.5723	1.1618	0.0000	5,611.8455	5,611.8455	0.6929	0.2433	5,701.6686
Maximum	**8.4247**	**38.8884**	**29.5539**	**0.0634**	**19.7939**	**1.6357**	**21.4073**	**10.1388**	**1.5049**	**11.6230**	**0.0000**	**6,141.3666**	**6,141.3666**	**1.9492**	**0.2676**	**6,191.3878**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249
Energy	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Mobile	3.9055	5.5103	39.6050	0.0763	8.5705	0.0616	8.6321	2.2847	0.0575	2.3422		7,973.8394	7,973.8394	0.5885	0.4156	8,112.4131
Total	**12.4766**	**6.7357**	**54.6445**	**0.0838**	**8.5705**	**0.2280**	**8.7985**	**2.2847**	**0.2239**	**2.5086**	**0.0000**	**9,349.8879**	**9,349.8879**	**0.6396**	**0.4404**	**9,497.1121**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249
Energy	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Mobile	3.8687	5.4256	39.0282	0.0748	8.3991	0.0604	8.4595	2.2390	0.0565	2.2955		7,819.3102	7,819.3102	0.5813	0.4094	7,955.8291
Total	**12.4398**	**6.6509**	**54.0677**	**0.0823**	**8.3991**	**0.2269**	**8.6260**	**2.2390**	**0.2229**	**2.4619**	**0.0000**	**9,195.3588**	**9,195.3588**	**0.6324**	**0.4341**	**9,340.5282**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.29**	**1.26**	**1.06**	**1.77**	**2.00**	**0.49**	**1.96**	**2.00**	**0.46**	**1.86**	**0.00**	**1.65**	**1.65**	**1.13**	**1.43**	**1.65**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/4/2022	5	4	
2	Grading	Grading	8/5/2022	9/15/2022	5	30	
3	Paving	Paving	9/16/2022	9/21/2022	5	4	
4	Building Construction	Building Construction	9/22/2022	6/25/2025	5	720	
5	Architectural Coating	Architectural Coating	10/6/2022	7/9/2025	5	720	

Acres of Grading (Site Preparation Phase): 6

Acres of Grading (Grading Phase): 90

Acres of Paving: 5.03

Residential Indoor: 645,165; Residential Outdoor: 215,055; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 13,146 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	193.00	70.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	39.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0576	0.0404	0.4612	1.1500e-003	0.1369	7.4000e-004	0.1377	0.0363	6.8000e-004	0.0370		116.9605	116.9605	4.4700e-003	3.9000e-003	118.2347
Total	**0.0576**	**0.0404**	**0.4612**	**1.1500e-003**	**0.1369**	**7.4000e-004**	**0.1377**	**0.0363**	**6.8000e-004**	**0.0370**		**116.9605**	**116.9605**	**4.4700e-003**	**3.9000e-003**	**118.2347**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0576	0.0404	0.4612	1.1500e-003	0.1369	7.4000e-004	0.1377	0.0363	6.8000e-004	0.0370		116.9605	116.9605	4.4700e-003	3.9000e-003	118.2347
Total	**0.0576**	**0.0404**	**0.4612**	**1.1500e-003**	**0.1369**	**7.4000e-004**	**0.1377**	**0.0363**	**6.8000e-004**	**0.0370**		**116.9605**	**116.9605**	**4.4700e-003**	**3.9000e-003**	**118.2347**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0640	0.0449	0.5124	1.2800e-003	0.1521	8.3000e-004	0.1530	0.0404	7.6000e-004	0.0411		129.9561	129.9561	4.9700e-003	4.3300e-003	131.3719
Total	**0.0640**	**0.0449**	**0.5124**	**1.2800e-003**	**0.1521**	**8.3000e-004**	**0.1530**	**0.0404**	**7.6000e-004**	**0.0411**		**129.9561**	**129.9561**	**4.9700e-003**	**4.3300e-003**	**131.3719**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0640	0.0449	0.5124	1.2800e-003	0.1521	8.3000e-004	0.1530	0.0404	7.6000e-004	0.0411		129.9561	129.9561	4.9700e-003	4.3300e-003	131.3719
Total	**0.0640**	**0.0449**	**0.5124**	**1.2800e-003**	**0.1521**	**8.3000e-004**	**0.1530**	**0.0404**	**7.6000e-004**	**0.0411**		**129.9561**	**129.9561**	**4.9700e-003**	**4.3300e-003**	**131.3719**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	3.2947					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3975**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0480	0.0337	0.3843	9.6000e-004	0.1141	6.2000e-004	0.1147	0.0303	5.7000e-004	0.0308		97.4671	97.4671	3.7200e-003	3.2500e-003	98.5290
Total	**0.0480**	**0.0337**	**0.3843**	**9.6000e-004**	**0.1141**	**6.2000e-004**	**0.1147**	**0.0303**	**5.7000e-004**	**0.0308**		**97.4671**	**97.4671**	**3.7200e-003**	**3.2500e-003**	**98.5290**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	3.2947					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3975**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0480	0.0337	0.3843	9.6000e-004	0.1141	6.2000e-004	0.1147	0.0303	5.7000e-004	0.0308		97.4671	97.4671	3.7200e-003	3.2500e-003	98.5290
Total	**0.0480**	**0.0337**	**0.3843**	**9.6000e-004**	**0.1141**	**6.2000e-004**	**0.1147**	**0.0303**	**5.7000e-004**	**0.0308**		**97.4671**	**97.4671**	**3.7200e-003**	**3.2500e-003**	**98.5290**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1489	4.0953	1.1988	0.0138	0.4218	0.0373	0.4591	0.1214	0.0357	0.1571		1,481.1611	1,481.1611	0.0386	0.2173	1,546.8789
Worker	0.6179	0.4336	4.9447	0.0123	1.4682	7.9700e-003	1.4761	0.3894	7.3400e-003	0.3968		1,254.0761	1,254.0761	0.0479	0.0418	1,267.7392
Total	**0.7668**	**4.5289**	**6.1434**	**0.0262**	**1.8899**	**0.0453**	**1.9352**	**0.5108**	**0.0430**	**0.5539**		**2,735.2372**	**2,735.2372**	**0.0865**	**0.2591**	**2,814.6181**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1489	4.0953	1.1988	0.0138	0.4218	0.0373	0.4591	0.1214	0.0357	0.1571		1,481.1611	1,481.1611	0.0386	0.2173	1,546.8789
Worker	0.6179	0.4336	4.9447	0.0123	1.4682	7.9700e-003	1.4761	0.3894	7.3400e-003	0.3968		1,254.0761	1,254.0761	0.0479	0.0418	1,267.7392
Total	**0.7668**	**4.5289**	**6.1434**	**0.0262**	**1.8899**	**0.0453**	**1.9352**	**0.5108**	**0.0430**	**0.5539**		**2,735.2372**	**2,735.2372**	**0.0865**	**0.2591**	**2,814.6181**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0906	3.4836	1.0550	0.0134	0.4217	0.0183	0.4400	0.1214	0.0175	0.1389		1,431.7149	1,431.7149	0.0352	0.2102	1,495.2408
Worker	0.5760	0.3834	4.5810	0.0119	1.4682	7.5700e-003	1.4757	0.3894	6.9700e-003	0.3964		1,221.8408	1,221.8408	0.0434	0.0387	1,234.4552
Total	**0.6665**	**3.8670**	**5.6360**	**0.0253**	**1.8899**	**0.0259**	**1.9158**	**0.5108**	**0.0245**	**0.5353**		**2,653.5557**	**2,653.5557**	**0.0786**	**0.2489**	**2,729.6960**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0906	3.4836	1.0550	0.0134	0.4217	0.0183	0.4400	0.1214	0.0175	0.1389		1,431.7149	1,431.7149	0.0352	0.2102	1,495.2408
Worker	0.5760	0.3834	4.5810	0.0119	1.4682	7.5700e-003	1.4757	0.3894	6.9700e-003	0.3964		1,221.8408	1,221.8408	0.0434	0.0387	1,234.4552
Total	**0.6665**	**3.8670**	**5.6360**	**0.0253**	**1.8899**	**0.0259**	**1.9158**	**0.5108**	**0.0245**	**0.5353**		**2,653.5557**	**2,653.5557**	**0.0786**	**0.2489**	**2,729.6960**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0865	3.4155	1.0224	0.0131	0.4217	0.0180	0.4397	0.1214	0.0172	0.1386		1,404.6262	1,404.6262	0.0342	0.2067	1,467.0745
Worker	0.5391	0.3413	4.2727	0.0116	1.4682	7.2100e-003	1.4754	0.3894	6.6400e-003	0.3961		1,191.4221	1,191.4221	0.0394	0.0360	1,203.1263
Total	**0.6256**	**3.7568**	**5.2951**	**0.0246**	**1.8898**	**0.0252**	**1.9151**	**0.5108**	**0.0239**	**0.5347**		**2,596.0483**	**2,596.0483**	**0.0736**	**0.2427**	**2,670.2008**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0865	3.4155	1.0224	0.0131	0.4217	0.0180	0.4397	0.1214	0.0172	0.1386		1,404.6262	1,404.6262	0.0342	0.2067	1,467.0745
Worker	0.5391	0.3413	4.2727	0.0116	1.4682	7.2100e-003	1.4754	0.3894	6.6400e-003	0.3961		1,191.4221	1,191.4221	0.0394	0.0360	1,203.1263
Total	**0.6256**	**3.7568**	**5.2951**	**0.0246**	**1.8898**	**0.0252**	**1.9151**	**0.5108**	**0.0239**	**0.5347**		**2,596.0483**	**2,596.0483**	**0.0736**	**0.2427**	**2,670.2008**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0832	3.3470	0.9984	0.0128	0.4216	0.0177	0.4393	0.1214	0.0169	0.1382		1,376.2990	1,376.2990	0.0335	0.2029	1,437.5939
Worker	0.5068	0.3063	4.0037	0.0112	1.4682	6.8900e-003	1.4750	0.3894	6.3400e-003	0.3958		1,162.6786	1,162.6786	0.0359	0.0336	1,173.5937
Total	**0.5900**	**3.6532**	**5.0021**	**0.0240**	**1.8898**	**0.0245**	**1.9143**	**0.5108**	**0.0232**	**0.5340**		**2,538.9777**	**2,538.9777**	**0.0694**	**0.2365**	**2,611.1876**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0832	3.3470	0.9984	0.0128	0.4216	0.0177	0.4393	0.1214	0.0169	0.1382		1,376.2990	1,376.2990	0.0335	0.2029	1,437.5939
Worker	0.5068	0.3063	4.0037	0.0112	1.4682	6.8900e-003	1.4750	0.3894	6.3400e-003	0.3958		1,162.6786	1,162.6786	0.0359	0.0336	1,173.5937
Total	**0.5900**	**3.6532**	**5.0021**	**0.0240**	**1.8898**	**0.0245**	**1.9143**	**0.5108**	**0.0232**	**0.5340**		**2,538.9777**	**2,538.9777**	**0.0694**	**0.2365**	**2,611.1876**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**5.8268**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1249	0.0876	0.9992	2.4900e-003	0.2967	1.6100e-003	0.2983	0.0787	1.4800e-003	0.0802		253.4143	253.4143	9.6800e-003	8.4500e-003	256.1753
Total	**0.1249**	**0.0876**	**0.9992**	**2.4900e-003**	**0.2967**	**1.6100e-003**	**0.2983**	**0.0787**	**1.4800e-003**	**0.0802**		**253.4143**	**253.4143**	**9.6800e-003**	**8.4500e-003**	**256.1753**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**5.8268**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1249	0.0876	0.9992	2.4900e-003	0.2967	1.6100e-003	0.2983	0.0787	1.4800e-003	0.0802		253.4143	253.4143	9.6800e-003	8.4500e-003	256.1753
Total	**0.1249**	**0.0876**	**0.9992**	**2.4900e-003**	**0.2967**	**1.6100e-003**	**0.2983**	**0.0787**	**1.4800e-003**	**0.0802**		**253.4143**	**253.4143**	**9.6800e-003**	**8.4500e-003**	**256.1753**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**5.8140**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1164	0.0775	0.9257	2.4100e-003	0.2967	1.5300e-003	0.2982	0.0787	1.4100e-003	0.0801		246.9005	246.9005	8.7700e-003	7.8200e-003	249.4495
Total	**0.1164**	**0.0775**	**0.9257**	**2.4100e-003**	**0.2967**	**1.5300e-003**	**0.2982**	**0.0787**	**1.4100e-003**	**0.0801**		**246.9005**	**246.9005**	**8.7700e-003**	**7.8200e-003**	**249.4495**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**5.8140**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1164	0.0775	0.9257	2.4100e-003	0.2967	1.5300e-003	0.2982	0.0787	1.4100e-003	0.0801		246.9005	246.9005	8.7700e-003	7.8200e-003	249.4495
Total	**0.1164**	**0.0775**	**0.9257**	**2.4100e-003**	**0.2967**	**1.5300e-003**	**0.2982**	**0.0787**	**1.4100e-003**	**0.0801**		**246.9005**	**246.9005**	**8.7700e-003**	**7.8200e-003**	**249.4495**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**5.8031**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1089	0.0690	0.8634	2.3300e-003	0.2967	1.4600e-003	0.2981	0.0787	1.3400e-003	0.0800		240.7537	240.7537	7.9700e-003	7.2700e-003	243.1188
Total	**0.1089**	**0.0690**	**0.8634**	**2.3300e-003**	**0.2967**	**1.4600e-003**	**0.2981**	**0.0787**	**1.3400e-003**	**0.0800**		**240.7537**	**240.7537**	**7.9700e-003**	**7.2700e-003**	**243.1188**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**5.8031**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1089	0.0690	0.8634	2.3300e-003	0.2967	1.4600e-003	0.2981	0.0787	1.3400e-003	0.0800		240.7537	240.7537	7.9700e-003	7.2700e-003	243.1188
Total	**0.1089**	**0.0690**	**0.8634**	**2.3300e-003**	**0.2967**	**1.4600e-003**	**0.2981**	**0.0787**	**1.3400e-003**	**0.0800**		**240.7537**	**240.7537**	**7.9700e-003**	**7.2700e-003**	**243.1188**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.7932**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1024	0.0619	0.8090	2.2600e-003	0.2967	1.3900e-003	0.2981	0.0787	1.2800e-003	0.0800		234.9454	234.9454	7.2500e-003	6.7900e-003	237.1511
Total	**0.1024**	**0.0619**	**0.8090**	**2.2600e-003**	**0.2967**	**1.3900e-003**	**0.2981**	**0.0787**	**1.2800e-003**	**0.0800**		**234.9454**	**234.9454**	**7.2500e-003**	**6.7900e-003**	**237.1511**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.6223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.7932**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1024	0.0619	0.8090	2.2600e-003	0.2967	1.3900e-003	0.2981	0.0787	1.2800e-003	0.0800		234.9454	234.9454	7.2500e-003	6.7900e-003	237.1511
Total	**0.1024**	**0.0619**	**0.8090**	**2.2600e-003**	**0.2967**	**1.3900e-003**	**0.2981**	**0.0787**	**1.2800e-003**	**0.0800**		**234.9454**	**234.9454**	**7.2500e-003**	**6.7900e-003**	**237.1511**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.8687	5.4256	39.0282	0.0748	8.3991	0.0604	8.4595	2.2390	0.0565	2.2955		7,819.3102	7,819.3102	0.5813	0.4094	7,955.8291
Unmitigated	3.9055	5.5103	39.6050	0.0763	8.5705	0.0616	8.6321	2.2847	0.0575	2.3422		7,973.8394	7,973.8394	0.5885	0.4156	8,112.4131

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,584.15	1,584.15	1584.15	4,065,102	3,983,800
Total	1,584.15	1,584.15	1,584.15	4,065,102	3,983,800

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	10.00	5.00	6.50	33.00	48.00	19.00	66	28	6
Other Asphalt Surfaces	10.00	5.00	6.50	0.00	0.00	0.00	0	0	0
Single Family Housing	10.00	5.00	6.50	46.50	12.50	41.00	86	11	3

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207
Other Asphalt Surfaces	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207
Single Family Housing	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
NaturalGas Unmitigated	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11472.9	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Total		**0.1237**	**1.0573**	**0.4499**	**6.7500e-003**		**0.0855**	**0.0855**		**0.0855**	**0.0855**		**1,349.7532**	**1,349.7532**	**0.0259**	**0.0248**	**1,357.7741**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11.4729	0.1237	1.0573	0.4499	6.7500e-003		0.0855	0.0855		0.0855	0.0855		1,349.7532	1,349.7532	0.0259	0.0248	1,357.7741
Total		**0.1237**	**1.0573**	**0.4499**	**6.7500e-003**		**0.0855**	**0.0855**		**0.0855**	**0.0855**		**1,349.7532**	**1,349.7532**	**0.0259**	**0.0248**	**1,357.7741**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249
Unmitigated	8.4474	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810	0.0000	26.2953	26.2953	0.0252	0.0000	26.9249

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1091					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.9003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4381	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810		26.2953	26.2953	0.0252		26.9249
Total	**8.4474**	**0.1681**	**14.5896**	**7.7000e-004**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**26.2953**	**26.2953**	**0.0252**	**0.0000**	**26.9249**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1091					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.9003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4381	0.1681	14.5896	7.7000e-004		0.0810	0.0810		0.0810	0.0810		26.2953	26.2953	0.0252		26.9249
Total	**8.4474**	**0.1681**	**14.5896**	**7.7000e-004**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**26.2953**	**26.2953**	**0.0252**	**0.0000**	**26.9249**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Sacramento Metropolitan AQMD Air District, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Forklifts	Diesel	No Change	0	3	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	4	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	9	No Change	0.00
Welders	Diesel	No Change	0	1	No Change	0.00

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	6.65600E-002	4.50610E-001	6.51810E-001	1.07000E-003	2.32200E-002	2.32200E-002	0.00000E+000	9.19171E+001	9.19171E+001	5.33000E-003	0.00000E+000	9.20504E+001
Cranes	1.06990E-001	1.14213E+000	5.67420E-001	1.82000E-003	4.77300E-002	4.39100E-002	0.00000E+000	1.59689E+002	1.59689E+002	5.16500E-002	0.00000E+000	1.60981E+002
Excavators	6.07000E-003	5.33100E-002	9.76500E-002	1.50000E-004	2.58000E-003	2.37000E-003	0.00000E+000	1.36082E+001	1.36082E+001	4.40000E-003	0.00000E+000	1.37182E+001
Forklifts	1.05700E-001	9.90130E-001	1.23310E+000	1.65000E-003	5.90100E-002	5.42900E-002	0.00000E+000	1.45035E+002	1.45035E+002	4.69100E-002	0.00000E+000	1.46207E+002
Generator Sets	1.05770E-001	9.42690E-001	1.31987E+000	2.37000E-003	4.24800E-002	4.24800E-002	0.00000E+000	2.03475E+002	2.03475E+002	8.51000E-003	0.00000E+000	2.03687E+002
Graders	6.22000E-003	7.88600E-002	2.58300E-002	1.00000E-004	2.51000E-003	2.31000E-003	0.00000E+000	8.72638E+000	8.72638E+000	2.82000E-003	0.00000E+000	8.79693E+000
Pavers	8.30000E-004	8.40000E-003	1.15400E-002	2.00000E-005	4.00000E-004	3.70000E-004	0.00000E+000	1.65201E+000	1.65201E+000	5.30000E-004	0.00000E+000	1.66537E+000
Paving Equipment	7.10000E-004	6.95000E-003	1.01800E-002	2.00000E-005	3.40000E-004	3.10000E-004	0.00000E+000	1.43142E+000	1.43142E+000	4.60000E-004	0.00000E+000	1.44300E+000
Rollers	6.70000E-004	6.90000E-003	7.44000E-003	1.00000E-005	4.00000E-004	3.70000E-004	0.00000E+000	9.22080E-001	9.22080E-001	3.00000E-004	0.00000E+000	9.29530E-001
Rubber Tired Dozers	1.75800E-002	1.84670E-001	7.52200E-002	1.80000E-004	8.76000E-003	8.06000E-003	0.00000E+000	1.57558E+001	1.57558E+001	5.10000E-003	0.00000E+000	1.58831E+001
Scrapers	2.45800E-002	2.68300E-001	1.91270E-001	4.60000E-004	1.04700E-002	9.64000E-003	0.00000E+000	4.00149E+001	4.00149E+001	1.29400E-002	0.00000E+000	4.03384E+001
Tractors/Loaders/ Backhoes	1.44820E-001	1.46488E+000	2.19546E+000	3.06000E-003	6.96100E-002	6.40400E-002	0.00000E+000	2.69025E+002	2.69025E+002	8.70100E-002	0.00000E+000	2.71201E+002
Welders	8.77800E-002	5.02760E-001	6.01180E-001	9.20000E-004	1.82600E-002	1.82600E-002	0.00000E+000	6.77594E+001	6.77594E+001	7.12000E-003	0.00000E+000	6.79375E+001

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	6.65600E-002	4.50610E-001	6.51810E-001	1.07000E-003	2.32200E-002	2.32200E-002	0.00000E+000	9.19170E+001	9.19170E+001	5.33000E-003	0.00000E+000	9.20503E+001
Cranes	1.06990E-001	1.14213E+000	5.67420E-001	1.82000E-003	4.77300E-002	4.39100E-002	0.00000E+000	1.59689E+002	1.59689E+002	5.16500E-002	0.00000E+000	1.60980E+002
Excavators	6.07000E-003	5.33100E-002	9.76500E-002	1.50000E-004	2.58000E-003	2.37000E-003	0.00000E+000	1.36082E+001	1.36082E+001	4.40000E-003	0.00000E+000	1.37182E+001
Forklifts	1.05700E-001	9.90130E-001	1.23310E+000	1.65000E-003	5.90100E-002	5.42900E-002	0.00000E+000	1.45034E+002	1.45034E+002	4.69100E-002	0.00000E+000	1.46207E+002
Generator Sets	1.05770E-001	9.42690E-001	1.31987E+000	2.37000E-003	4.24800E-002	4.24800E-002	0.00000E+000	2.03474E+002	2.03474E+002	8.51000E-003	0.00000E+000	2.03687E+002
Graders	6.22000E-003	7.88600E-002	2.58300E-002	1.00000E-004	2.51000E-003	2.31000E-003	0.00000E+000	8.72637E+000	8.72637E+000	2.82000E-003	0.00000E+000	8.79692E+000
Pavers	8.30000E-004	8.40000E-003	1.15400E-002	2.00000E-005	4.00000E-004	3.70000E-004	0.00000E+000	1.65201E+000	1.65201E+000	5.30000E-004	0.00000E+000	1.66537E+000
Paving Equipment	7.10000E-004	6.95000E-003	1.01800E-002	2.00000E-005	3.40000E-004	3.10000E-004	0.00000E+000	1.43142E+000	1.43142E+000	4.60000E-004	0.00000E+000	1.44299E+000
Rollers	6.70000E-004	6.90000E-003	7.44000E-003	1.00000E-005	4.00000E-004	3.70000E-004	0.00000E+000	9.22080E-001	9.22080E-001	3.00000E-004	0.00000E+000	9.29530E-001
Rubber Tired Dozers	1.75800E-002	1.84670E-001	7.52200E-002	1.80000E-004	8.76000E-003	8.06000E-003	0.00000E+000	1.57557E+001	1.57557E+001	5.10000E-003	0.00000E+000	1.58831E+001
Scrapers	2.45800E-002	2.68300E-001	1.91270E-001	4.60000E-004	1.04700E-002	9.64000E-003	0.00000E+000	4.00148E+001	4.00148E+001	1.29400E-002	0.00000E+000	4.03383E+001
Tractors/Loaders/Backhoes	1.44820E-001	1.46488E+000	2.19546E+000	3.06000E-003	6.96100E-002	6.40400E-002	0.00000E+000	2.69025E+002	2.69025E+002	8.70100E-002	0.00000E+000	2.71200E+002
Welders	8.77800E-002	5.02760E-001	6.01180E-001	9.20000E-004	1.82600E-002	1.82600E-002	0.00000E+000	6.77594E+001	6.77594E+001	7.12000E-003	0.00000E+000	6.79374E+001

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.08794E-006	1.08794E-006	0.00000E+000	0.00000E+000	1.19500E-006
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18981E-006	1.18981E-006	0.00000E+000	0.00000E+000	1.18027E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.46970E-006	1.46970E-006	0.00000E+000	0.00000E+000	1.45792E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.24108E-006	1.24108E-006	0.00000E+000	0.00000E+000	1.16273E-006
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.17951E-006	1.17951E-006	0.00000E+000	0.00000E+000	1.17828E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.14595E-006	1.14595E-006	0.00000E+000	0.00000E+000	1.13676E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	6.93001E-006
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.26938E-006	1.26938E-006	0.00000E+000	0.00000E+000	6.29598E-007
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.24954E-006	1.24954E-006	0.00000E+000	0.00000E+000	1.23951E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18948E-006	1.18948E-006	0.00000E+000	0.00000E+000	1.21681E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18065E-006	1.18065E-006	0.00000E+000	0.00000E+000	1.17755E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.10	0.03	0.10	0.03	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.66	0.18	0.66	0.18	0.00	0.00
Grading	Fugitive Dust	0.14	0.05	0.14	0.05	0.00	0.00
Grading	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.04	0.02	0.04	0.02	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.87	1.55	1.53	1.98	1.79	1.72	0.00	1.94	1.94	1.29	1.53	1.93
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.44	5.84	0.65	0.22	5.05
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting: Suburban Center

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.18	0.45		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Yes	Neighborhood Enhancements	Improve Pedestrian Network	2.00	Project Site and Connecting Off-Site		
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.02			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.02			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"	4.50			
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

No	Commute	Provide Ride Sharing Program	10.00			
	Commute	Commute Subtotal	0.00			
No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.02			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	0.00	20.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Robla Estates Project

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigation Measures	Input Value
Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

BREEZE AERMOD Model Results

Max. Annual (4 YEARS) Results of Pollutant: PM25 (ug/m**3)

Group ID	High	Avg. Conc.	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
			East (m)	North (m)	(m)	(m)	(m)		
ALL	1ST	0.04762	635100.60	4280809.40	0.00	0.00	1.80	DC	
	2ND	0.04761	635100.60	4280804.40	0.00	0.00	1.80	DC	
	3RD	0.04758	635100.60	4280799.40	0.00	0.00	1.80	DC	
	4TH	0.04751	635100.60	4280794.40	0.00	0.00	1.80	DC	
	5TH	0.04743	635100.60	4280789.40	0.00	0.00	1.80	DC	
	6TH	0.04732	635100.60	4280784.40	0.00	0.00	1.80	DC	
	7TH	0.04720	635100.60	4280779.40	0.00	0.00	1.80	DC	
	8TH	0.04706	635100.60	4280774.40	0.00	0.00	1.80	DC	
	9TH	0.04691	635100.60	4280769.40	0.00	0.00	1.80	DC	
	10TH	0.04673	635100.60	4280764.40	0.00	0.00	1.80	DC	

Highest Results of Pollutant: PM25

Avg. Per.	Grp ID	High	Type	Val	Units	Date	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
						YYMMDDHH	East (m)	North (m)	(m)	(m)	(m)		
1-HR	ALL	1ST	Avg. Conc.	3.24318	ug/m**3	16010809	634945.90	4280620.70	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
6	Warning Message(s)
996	Informational Message(s)
43680	Hours Were Processed
452	Calm Hours Identified
544	Missing Hours Identified (1.25 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description
WARNING	CO	W276	Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled PM25 H1H
WARNING	CO	W363	Multiyr 24h/Ann PM25 processing not applicable for PM25 H1H

WARNING	ME	W186	THRESH_1MIN 1-min ASOS wind speed threshold used 0.50

www.breeze-software.com

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Robla Estates Project
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,ANNUAL
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	PM25 H1H
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	F
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\bshea\Desktop\METEOR~1\SACINT~1.SFC
ME	PROFFILE	Profile met file	C:\Users\bshea\Desktop\METEOR~1\SACINT~1.PFL
ME	SURFDATA	Surf met data info.	93225 2014
ME	UAIRDATA	U-Air met data info.	23230 2014
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	8.23
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
N7OA1001	VOLUME		634958.4	4280705.5	0	0.0003008859	(g/s)	5
N7OA1002	VOLUME		635022.1	4280705.5	0	0.000300885924046	(g/s)	5
N7OA1003	VOLUME		634894.8	4280769.1	0	0.000300885924046	(g/s)	5
N7OA1004	VOLUME		634958.4	4280769.1	0	0.000300885924046	(g/s)	5
N7OA1005	VOLUME		635022.1	4280769.1	0	0.000300885924046	(g/s)	5
N7OA1006	VOLUME		634894.8	4280832.7	0	0.000300885924046	(g/s)	5
N7OA1007	VOLUME		634958.4	4280832.7	0	0.000300885924046	(g/s)	5
N7OA1008	VOLUME		635022.1	4280832.7	0	0.0003008859	(g/s)	5
N7OA1009	VOLUME		634831.2	4280896.4	0	0.000300885924046	(g/s)	5
N7OA100A	VOLUME		634894.8	4280896.4	0	0.000300885924046	(g/s)	5
N7OA100B	VOLUME		634958.4	4280896.4	0	0.000300885924046	(g/s)	5
N7OA100C	VOLUME		635022.1	4280896.4	0	0.000300885924046	(g/s)	5
N7OA100D	VOLUME		634831.2	4280960.0	0	0.000300885924046	(g/s)	5
N7OA100E	VOLUME		634894.8	4280960.0	0	0.000300885924046	(g/s)	5
N7OA100F	VOLUME		634958.4	4280960.0	0	0.0003008859	(g/s)	5
N7OA100G	VOLUME		635022.1	4280960.0	0	0.000300885924046	(g/s)	5
N7OA100H	VOLUME		634831.2	4281023.6	0	0.000300885924046	(g/s)	5
N7OA100I	VOLUME		634894.8	4281023.6	0	0.000300885924046	(g/s)	5
N7OA100J	VOLUME		634958.4	4281023.6	0	0.000300885924046	(g/s)	5
N7OA100K	VOLUME		635022.1	4281023.6	0	0.000300885924046	(g/s)	5

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)
N7OA1001		634958.4	4280705.5	0	0.0003008859	5	29.59	1
N7OA1002		635022.1	4280705.5	0	0.000300885924046	5	29.59	1
N7OA1003		634894.8	4280769.1	0	0.000300885924046	5	29.59	1
N7OA1004		634958.4	4280769.1	0	0.000300885924046	5	29.59	1
N7OA1005		635022.1	4280769.1	0	0.000300885924046	5	29.59	1
N7OA1006		634894.8	4280832.7	0	0.000300885924046	5	29.59	1
N7OA1007		634958.4	4280832.7	0	0.000300885924046	5	29.59	1
N7OA1008		635022.1	4280832.7	0	0.0003008859	5	29.59	1
N7OA1009		634831.2	4280896.4	0	0.000300885924046	5	29.59	1

N7OA100A		634894.8	4280896.4	0	0.000300885924046	5	29.59	1
N7OA100B		634958.4	4280896.4	0	0.000300885924046	5	29.59	1
N7OA100C		635022.1	4280896.4	0	0.000300885924046	5	29.59	1
N7OA100D		634831.2	4280960.0	0	0.000300885924046	5	29.59	1
N7OA100E		634894.8	4280960.0	0	0.000300885924046	5	29.59	1
N7OA100F		634958.4	4280960.0	0	0.0003008859	5	29.59	1
N7OA100G		635022.1	4280960.0	0	0.000300885924046	5	29.59	1
N7OA100H		634831.2	4281023.6	0	0.000300885924046	5	29.59	1
N7OA100I		634894.8	4281023.6	0	0.000300885924046	5	29.59	1
N7OA100J		634958.4	4281023.6	0	0.000300885924046	5	29.59	1
N7OA100K		635022.1	4281023.6	0	0.000300885924046	5	29.59	1

*HARP - HRACalc v19044 3/2/2022 3:36:23 PM - Cancer Risk - Input File: C:\Users\bshea\Desktop\HARP\Robla_HF

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK
1			9901	DieselExhP	0.04762	1.81E-05	3YrCancerI	*	1.81E-05

RAInput.hra

SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RIS	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_F
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v19044 3/2/2022 3:36:23 PM - Chronic Risk - Input File: C:\Users\bshea\Desktop\HARP\Robla_H

INDEX	GRP1	GRP2	POLID	POLABBRE'	CONC	SCENARIO	CV	CNS	IMMUN
1			9901	DieselExhP	0.04762	NonCancer	0.00E+00	0.00E+00	0.00E+00

RAInput.hra

KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEET	ENDO	BLOOD	ODOR
0.00E+00	0.00E+00	0.00E+00	9.52E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE
0.00E+00	*	4.76E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_DOS	PIG_DOSE	CHICKEN_D	EGG_DOSE	1ST_DRIVE	2ND_DRIVE	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

)NC

*HARP - HRACalc v19044 3/2/2022 3:36:23 PM - Acute Risk - Input File: C:\Users\bshea\Desktop\HARP\Robla_HRA

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	SCENARIO	CV	CNS	IMMUN
1			9901	DieselExhP	3.24318	NonCancer	0.00E+00	0.00E+00	0.00E+00

AInput.hra

KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEET	ENDO	BLOOD	ODOR
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GENERAL
0.00E+00

BREEZE AERMOD Model Results

Max. Annual (4 YEARS) Results of Pollutant: PM25 (ug/m**3)

Group ID	High	Avg. Conc.	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
			East (m)	North (m)	(m)	(m)	(m)		
ALL	1ST	0.02617	635100.60	4280809.40	0.00	0.00	1.80	DC	
	2ND	0.02616	635100.60	4280804.40	0.00	0.00	1.80	DC	
	3RD	0.02614	635100.60	4280799.40	0.00	0.00	1.80	DC	
	4TH	0.02611	635100.60	4280794.40	0.00	0.00	1.80	DC	
	5TH	0.02606	635100.60	4280789.40	0.00	0.00	1.80	DC	
	6TH	0.02600	635100.60	4280784.40	0.00	0.00	1.80	DC	
	7TH	0.02594	635100.60	4280779.40	0.00	0.00	1.80	DC	
	8TH	0.02586	635100.60	4280774.40	0.00	0.00	1.80	DC	
	9TH	0.02577	635100.60	4280769.40	0.00	0.00	1.80	DC	
	10TH	0.02568	635100.60	4280764.40	0.00	0.00	1.80	DC	

Highest Results of Pollutant: PM25

Avg. Per.	Grp ID	High	Type	Val	Units	Date	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
						YYMMDDHH	East (m)	North (m)	(m)	(m)	(m)		
1-HR	ALL	1ST	Avg. Conc.	1.78210	ug/m**3	16010809	634945.90	4280620.70	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
6	Warning Message(s)
996	Informational Message(s)
43680	Hours Were Processed
452	Calm Hours Identified
544	Missing Hours Identified (1.25 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description
WARNING	CO	W276	Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled PM25 H1H
WARNING	CO	W363	Multiyr 24h/Ann PM25 processing not applicable for PM25 H1H

WARNING	ME	W186	THRESH_1MIN 1-min ASOS wind speed threshold used 0.50

www.breeze-software.com

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Robla Estates Project
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,ANNUAL
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	PM25 H1H
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	F
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\bshea\Desktop\METEOR~1\SACINT~1.SFC
ME	PROFFILE	Profile met file	C:\Users\bshea\Desktop\METEOR~1\SACINT~1.PFL
ME	SURFDATA	Surf met data info.	93225 2014
ME	UAIRDATA	U-Air met data info.	23230 2014
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	8.23
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
N7OA1001	VOLUME		634958.4	4280705.5	0	0.000165334692611	(g/s)	5
N7OA1002	VOLUME		635022.1	4280705.5	0	0.000165334692611	(g/s)	5
N7OA1003	VOLUME		634894.8	4280769.1	0	0.000165334692611	(g/s)	5
N7OA1004	VOLUME		634958.4	4280769.1	0	0.000165334692611	(g/s)	5
N7OA1005	VOLUME		635022.1	4280769.1	0	0.000165334692611	(g/s)	5
N7OA1006	VOLUME		634894.8	4280832.7	0	0.000165334692611	(g/s)	5
N7OA1007	VOLUME		634958.4	4280832.7	0	0.000165334692611	(g/s)	5
N7OA1008	VOLUME		635022.1	4280832.7	0	0.000165334692611	(g/s)	5
N7OA1009	VOLUME		634831.2	4280896.4	0	0.000165334692611	(g/s)	5
N7OA100A	VOLUME		634894.8	4280896.4	0	0.000165334692611	(g/s)	5
N7OA100B	VOLUME		634958.4	4280896.4	0	0.000165334692611	(g/s)	5
N7OA100C	VOLUME		635022.1	4280896.4	0	0.000165334692611	(g/s)	5
N7OA100D	VOLUME		634831.2	4280960.0	0	0.000165334692611	(g/s)	5
N7OA100E	VOLUME		634894.8	4280960.0	0	0.000165334692611	(g/s)	5
N7OA100F	VOLUME		634958.4	4280960.0	0	0.000165334692611	(g/s)	5
N7OA100G	VOLUME		635022.1	4280960.0	0	0.000165334692611	(g/s)	5
N7OA100H	VOLUME		634831.2	4281023.6	0	0.000165334692611	(g/s)	5
N7OA100I	VOLUME		634894.8	4281023.6	0	0.000165334692611	(g/s)	5
N7OA100J	VOLUME		634958.4	4281023.6	0	0.000165334692611	(g/s)	5
N7OA100K	VOLUME		635022.1	4281023.6	0	0.000165334692611	(g/s)	5

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)
N7OA1001		634958.4	4280705.5	0	0.000165334692611	5	29.59	1
N7OA1002		635022.1	4280705.5	0	0.000165334692611	5	29.59	1
N7OA1003		634894.8	4280769.1	0	0.000165334692611	5	29.59	1
N7OA1004		634958.4	4280769.1	0	0.000165334692611	5	29.59	1
N7OA1005		635022.1	4280769.1	0	0.000165334692611	5	29.59	1
N7OA1006		634894.8	4280832.7	0	0.000165334692611	5	29.59	1
N7OA1007		634958.4	4280832.7	0	0.000165334692611	5	29.59	1
N7OA1008		635022.1	4280832.7	0	0.000165334692611	5	29.59	1
N7OA1009		634831.2	4280896.4	0	0.000165334692611	5	29.59	1

N7OA100A		634894.8	4280896.4	0	0.000165334692611	5	29.59	1
N7OA100B		634958.4	4280896.4	0	0.000165334692611	5	29.59	1
N7OA100C		635022.1	4280896.4	0	0.000165334692611	5	29.59	1
N7OA100D		634831.2	4280960.0	0	0.000165334692611	5	29.59	1
N7OA100E		634894.8	4280960.0	0	0.000165334692611	5	29.59	1
N7OA100F		634958.4	4280960.0	0	0.000165334692611	5	29.59	1
N7OA100G		635022.1	4280960.0	0	0.000165334692611	5	29.59	1
N7OA100H		634831.2	4281023.6	0	0.000165334692611	5	29.59	1
N7OA100I		634894.8	4281023.6	0	0.000165334692611	5	29.59	1
N7OA100J		634958.4	4281023.6	0	0.000165334692611	5	29.59	1
N7OA100K		635022.1	4281023.6	0	0.000165334692611	5	29.59	1

*HARP - HRACalc v19044 3/2/2022 4:00:49 PM - Cancer Risk - Input File: C:\Users\bshea\Desktop\HARP\RoblaMit

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK
1			9901	DieselExhP	0.02617	9.97E-06	3YrCancerI	*	9.97E-06

_HRAInput.hra

SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RIS	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_F
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EGG_RISK	1ST_DRIVE	2ND_DRIVI	PASTURE_(	FISH_CONC	WATER_CONC
0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v19044 3/2/2022 4:00:49 PM - Chronic Risk - Input File: C:\Users\bshea\Desktop\HARP\RoblaMi

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	SCENARIO	CV	CNS	IMMUN
1			9901	DieselExhP	0.02617	NonCancer	0.00E+00	0.00E+00	0.00E+00

t_HRAInput.hra

KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEET	ENDO	BLOOD	ODOR
0.00E+00	0.00E+00	0.00E+00	5.23E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_D	MMILK_DC	WATER_DC	FISH_DOSE	CROP_DOS	BEEF_DOSE
0.00E+00	*	2.62E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

DAIRY_DOS	PIG_DOSE	CHICKEN_D	EGG_DOSE	1ST_DRIVE	2ND_DRIVE	3RD_DRIVE	PASTURE_(	FISH_CONC	WATER_CC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIO	NA	NA	0.00E+00	0.00E+00	0.00E+00

)NC

*HARP - HRACalc v19044 3/2/2022 4:00:49 PM - Acute Risk - Input File: C:\Users\bshea\Desktop\HARP\RoblaMit_

INDEX	GRP1	GRP2	POLID	POLABBRE'	CONC	SCENARIO	CV	CNS	IMMUN
1			9901	DieselExhP	1.7821	NonCancer	0.00E+00	0.00E+00	0.00E+00

HRAInput.hra

KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	BONE/TEET	ENDO	BLOOD	ODOR
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GENERAL
0.00E+00

APPENDIX B
ARBORIST REPORT

August 17, 2020

Marco Gabbiani
5330 Rio Linda LLC
C/O: Michael T Robertson
Baker-Williams Engineering Group
6020 Rutland Dr Suite 19
Carmichael, CA 95608
VIA Email: miker@bwengineers.com

PRELIMINARY ARBORIST REPORT & TREE INVENTORY

RE: 5330 Rio Linda Blvd., APN 226-0062-004-0000, 226-0062-011-0000, 226-0062-008-0000; City of Sacramento jurisdiction, California

Executive Summary:

Michael Robertson of Baker-Williams, on behalf of the property owner, contacted California Tree and Landscape Consulting, Inc. to inventory and evaluate the protected trees on the site or within 25' of development for purposes of evaluating the impacts to the trees from Robla Estates Tentative Subdivision Map by Baker-Williams, dated July 2020. The property is located at 5330 Rio Linda Blvd. and falls under the jurisdiction of the City of Sacramento. See Supporting Information Appendix A –Tree Location Maps and Site Plan.

Nicole Harrison, ISA Certified Arborist #WE-6500AM, and/or Dave Merchado, ISA Certified Arborist #WE-7311A were at the site from July 30th to August 14th 2020. A total of 46 trees are included in the inventory. 12 trees are located on the parcel or within the street right of way. 34 trees included in the survey are along the Sacramento Northern Bike Path and could be impacted by the development proposal. Not *all* the trees in along the bike path were included, only trees potentially impacted by the development of these parcels. See Appendix 4 – Site Photos.

Tree Species	Trees Inventoried	Trees located on the Parcel[1]	Protected by Sacramento City Tree Preservation Code	Proposed for Removal	Trees impacted by the proposed development and requiring special protection measures
Valley Oak, Quercus lobata	17	1	1 (Private Protected/Street)	TBD	TBD
Blue Oak, *Quercus douglasii*	2	2		TBD	TBD
Interior Live Oak, *Quercus wislizenii*	1	-			
Aleppo Pine, *Pinus halepensis*	6	-			-
Almond, Prunus dulcis	6	1			
Black Willow, Salix nigra	2	1	1 (Private Protected)		TBD
Chinese Evergreen Elm, Ulmus parvifolia	1	1	1 (Street Tree)	TBD	
Western Cottonwood, Populus fremontii	4	-	2 (Private Protected)	-	TBD
Oregon Ash, Fraxinus latifolia	1	1		TBD	
Tree of Heaven, Ailanthus altissima	6	5	2 (Street Tree)		
Total:	**46**	**12**	**7**		

See Appendices for specific information on each tree

[1] CalTLC is not a licensed land surveyor. Tree locations on the 'Tree Location Map' are approximate. Tree ownership was not legally determined.

Methods

Appendix 2 in this report is the detailed inventory and recommendations for the trees. The following terms will further explain our findings.

No field tags were applied for this project.

A Level 2 – Basic Visual Assessment was performed in accordance with the International Society of Arboriculture's best management practices. This assessment level is limited to the observation of conditions and defects which are readily visible. Additional limiting factors, such as blackberries, poison oak, and/or debris piled at the base of a tree can inhibit the visual assessment.

Tree Location: The GPS location of each tree was collected using the ESRI's ArcGIS collector application on an Apple iPhone or Samsung. The data was then processed in ESRI's ArcMap by Julie McNamara, M.S. GISci, to produce the tree location map.

Tree Measurements: DBH (diameter breast high) is normally measured at 4'6" (above the average ground height for "Urban Forestry"), but if that varies then the location where it is measured is noted. All trees measured at ground level, noted by '0' in the measured at column, were estimated due to irregularities in the shape at the ground. A steel diameter tape was used to measure the trees. A Stanley laser distance meter was used to measure distances. Canopy radius measurements may also have been estimated due to obstructions, such as steep slopes or other trees.

Terms

Field Tag #	The pre-stamped tree number on the tag which is installed at approximately 6 feet above ground level on the north side of the tree.
City #	The number assigned to the tree in the City of Sacramento Managed Trees map available online.
Species	The species of a tree is listed by our local and correct common name and botanical name by genus (capitalized) and species (lower case). Oaks frequently cross-pollinate and hybridize, but the identification is towards the strongest characteristics.
DBH	Diameter breast high' is normally measured at 4'6" (above the average ground height for "Urban Forestry"), but if that varies then the location where it is measured is noted in the next column "measured at"
Measured at	Height above average ground level where the measurement of DBH was measured
Canopy radius	The farthest extent of the crown composed of leaves and small twigs. Most trees are not evenly balanced. This measurement represents the longest extension from the trunk to the outer canopy. The dripline measurement is from the center point of the tree and is shown on the Tree Location Map as a circle.
Arborist Rating	Subjective to condition and is based on both the health and structure of the tree. All of the trees were rated for condition, per the recognized national standard as set up by the Council of Tree and Landscape Appraisers and the International Society of Arboriculture (ISA) on a numeric scale of 5 (being the highest) to 0 (the worst condition, dead) as in Chart A. The rating was done in the field at the time of the measuring and inspection.

Arborist Ratings

No problem(s)	Excellent	**5**	No problems found from a visual ground inspection. Structurally, these trees have properly spaced branches and near perfect characteristics for the species. Highly rated trees are not common in natural or developed landscapes. No tree is ever perfect especially with the unpredictability of nature, but with this highest rating, the condition should be considered excellent.
No apparent problem(s)	Good	**4**	The tree is in good condition and there are no apparent problems that a Certified Arborist can see from a visual ground inspection. If potential

			structural or health problems are tended to at this stage future hazard can be reduced and more serious health problems can be averted.
Minor problem(s)	Fair	**3**	The tree is in fair condition. There are some minor structural or health problems that pose no immediate danger. When the recommended actions in an arborist report are completed correctly the defect(s) can be minimized or eliminated.
Major problem(s)	Fair to Poor	**2**	The tree has major problems. If the option is taken to preserve the tree, its condition could be improved with correct arboricultural work including, but not limited to: pruning, cabling, bracing, bolting, guying, spraying, mistletoe removal, vertical mulching, fertilization, etc. If the recommended actions are completed correctly, hazard can be reduced and the rating can be elevated to a 3. If no action is taken the tree is considered a liability and should be removed.
Extreme problem(s)	Poor	**1**	The problems are extreme. This rating is assigned to a tree that has structural and/or health problems that no amount of work or effort can change. The issues may or may not be considered a dangerous situation
Dead	Dead	**0**	This indicates a tree that has no significant sign of life

Notes: Provide notable details about each tree which are factors considered in the determination of the tree rating including: (a) condition of root crown and/or roots; (b) condition of trunk; (c) condition of limbs and structure; (d) growth history and twig condition; (e) leaf appearance; and (f) dripline environment. Notes also indicate if the standard tree evaluation procedure was not followed (for example - why dbh may have been measured at a location other than the standard 54”). Additionally, notes will list any evaluation limiting factors such as debris at the base of a tree.

Discussion

Trees need to be protected from normal construction practices if they are to remain healthy and viable on the site. Our recommendations are based on experience and the County ordinance requirements to enhance tree longevity. This requires their root zones remain intact and viable despite the use of heavy equipment to install foundations, driveways, underground utilities, and landscape irrigation systems. Simply walking and driving on soil can have serious consequences for tree health. Tree Protection measures should be incorporated into the site plans in order to protect the trees.

Root Structure

The majority of a tree’s roots are contained in a radius from the main trunk outward approximately two to three times the canopy of the tree. These roots are located in the top 6” to 3’ of soil. It is a common misconception that a tree underground resembles the canopy. The correct root structure of a tree is in the drawing below. All plants’ roots need both water and air for survival. Poor canopy development or canopy decline in mature trees after development is often the result of inadequate root space and/or soil compaction.

The reality of where roots are generally located

Our native oak trees are easily damaged or killed by having the soil within the Protected Root Zone (PRZ) disturbed or compacted. All of the work initially performed around protected trees that will be saved should be done by people rather than by wheeled or track type tractors. Oaks are fragile giants that can take little change in soil grade, compaction, or warm season watering. Don't be fooled into believing that warm season watering has no adverse effects on native oaks. Decline and eventual death can take as long as 5-20 years with poor care and inappropriate watering. Oaks can live hundreds of years if treated properly during construction, as well as later with proper pruning, and the appropriate landscape/irrigation design.

Arborist Classifications

There are different types of Arborists:

Tree Removal and/or Pruning Companies: These companies may be licensed by the State of California to do business, but they do not necessarily know anything about trees;

Arborists: Arborist is a broad term. It is intended to mean someone with specialized knowledge of trees but is often used to imply knowledge that is not there.

ISA Certified Arborist: An International Society of Arboriculture Certified Arborist is someone who has been trained and tested to have specialized knowledge of trees. You can look up certified arborists at the International Society of Arboriculture website: isa-arbor.org.

Consulting Arborist: An American Society of Consulting Arborists Registered Consulting Arborist is someone who has been trained and tested to have specialized knowledge of trees and trained and tested to provide high quality reports and documentation. You can look up registered consulting arborists at the American Society of Consulting Arborists website: asca-consultants.org

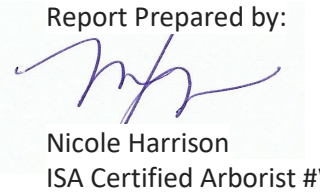
RECOMMENTATIONS: Summary of Tree Protection Measures for Site Planning

The Owner and/or Developer should ensure the project arborist's protection measures are incorporated into the site plans and followed. Tree specific protection measures can be found in Appendix 2 – Tree Information Data.

- Identify the Root Protection Zones on the final construction drawings and show the placement of tree protection fencing pursuant to the arborists recommendation or county requirements.
- The project arborist should review the final construction drawings prior to submittal and identify the impacts to each tree and recommend actions to increase the likelihood of long term survival post construction.

- The project arborist should inspect the fencing prior to grading and/or grubbing for compliance with the recommended protection zones.
- The project arborist should directly supervise the clearance pruning, irrigation, fertilization, placement of mulch and chemical treatments.
- All stumps within the root zone of trees to be preserved shall be ground out using a stump router or left in place. No trunk within the root zone of other trees shall be removed using a backhoe or other piece of grading equipment.
- Prior to any grading, or other work on the site that will come within 50' of any tree to be preserved, irrigation will be required from April through September and placement of a 4-6" layer of chip mulch over the protected root zone of all trees that will be impacted. Chips should be obtained from onsite materials and trees to be removed.
- Clearance pruning should include removal of all the lower foliage that may interfere with equipment PRIOR to having grading or other equipment on site. The Project Arborist should approve the extent of foliage elevation and oversee the pruning to be performed by a contractor who is an ISA Certified Arborist.
- Clearly designate an area on the site outside the drip line of all trees where construction materials may be stored, and parking can take place. No materials or parking shall take place within the root zones of protected trees.
- Any and all work to be performed inside the protected root zone fencing shall be supervised by the project arborist.
- Trenching inside the protected root zone shall be by a hydraulic or air spade, placing pipes underneath the roots, or boring deeper trenches underneath the roots.
- Include on the plans an Arborist inspection schedule to monitor the site during (and after) construction to ensure protection measures are followed and make recommendations for care of the trees on site, as needed.
- Follow all of the General Development Guidelines, Appendix 3, for all trees to remain.

Report Prepared by:



Nicole Harrison
ISA Certified Arborist #WC-6500AM, TRAQ
Member: American Society of Consulting Arborists

Appendix 1 – Tree Location Map/Development Site Plan
Appendix 2 – Tree Data and Tree Specific Recommendations
Appendix 3 – General Development Guidelines
Appendix 4 – Site Photos

Bibliography

International Society of Arboriculture. (2015). *Glossary of Arboricultural Terms.* Champaign: International Society of Arboriculture.
L.R., C. (2003). *Reducing Infrastructure Damage by Tree Roots.* Porterville: International Society of Arboriculture.

Matheny, J. C. (1994). *Evaluation of Hazard Trees in Urban Areas, Second Edition.* Champaign: International Society of Arboriculture.

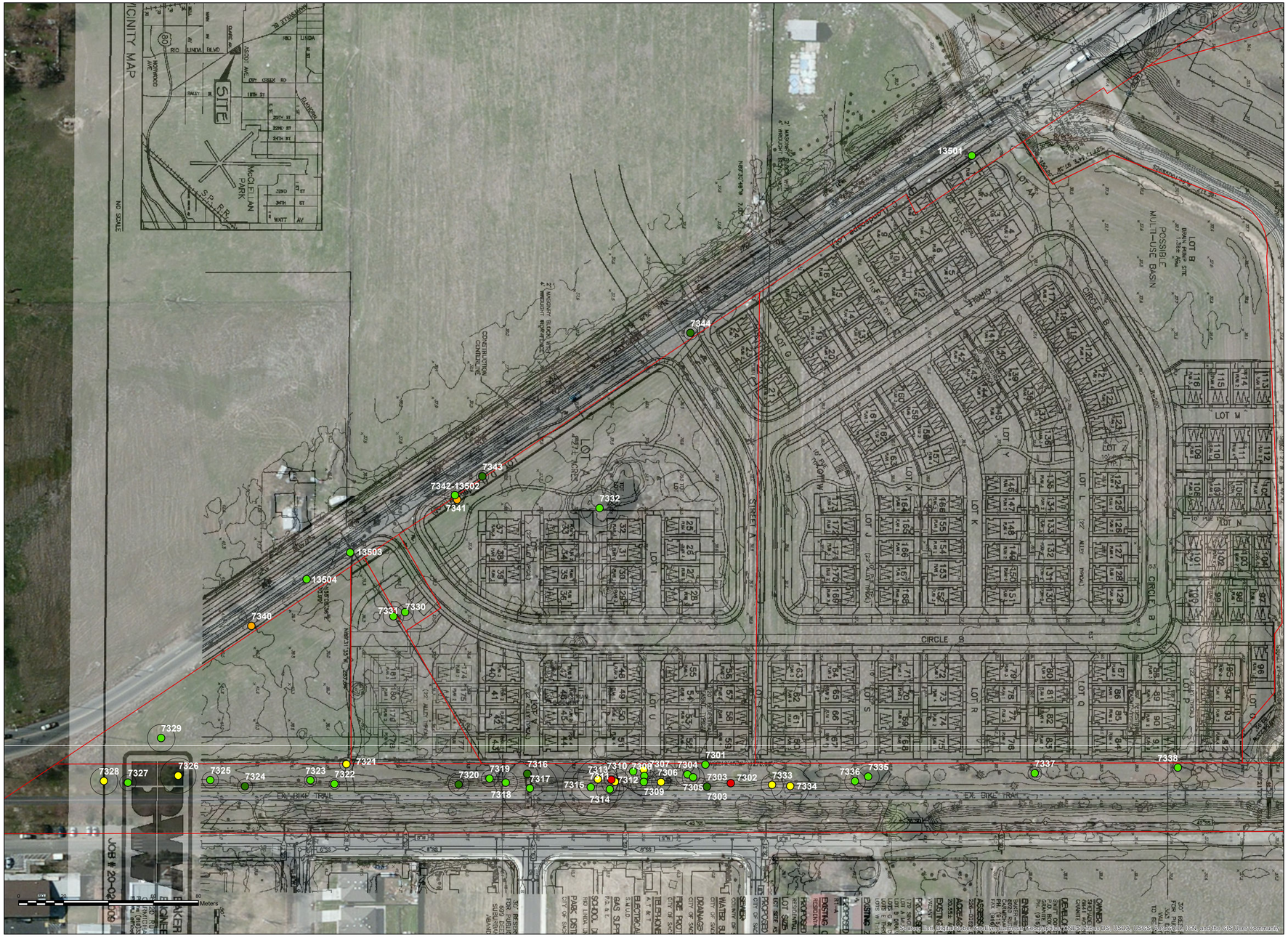
Menzer, K. (2008). *Consulting Arborist Report.*

Smiley. (2008). *Managing Trees During Construction, Best Management Practices.* Champaign: International Society of Arboriculture.

Stamen, R. (1997). *California Arboriculture Law.* Riverside: Law Offices of Randall S. Stamen.

Tree Care Industry Association. (2017). *Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning).* Londonderry: Tree Care Industry Association.

Urban, J. (2008). *Up by the Roots.* Champaign: International Society of Arboriculture.

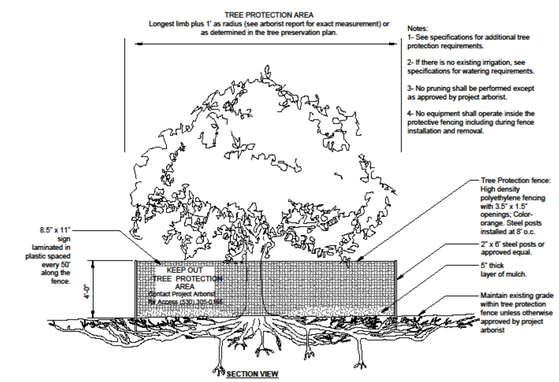


California Tree & Landscape Consulting, Inc.

1243 High Street
Auburn, CA 95603

TREE PROTECTION GENERAL REQUIREMENTS

1. The project arborist for this project is California Tree & Landscape Consulting. The primary contact information is Nicole Harrison (530) 305-0165. The project arborist may continue to provide expertise and make additional recommendations during the construction process if and when additional impacts occur or tree response is poor. Monitoring and construction oversight by the project arborist is recommended for all projects and required when a final letter of assessment is required by the jurisdiction.
2. The project arborist should inspect the exclusionary root protection fencing installed by the contractors prior to any grading and/or grubbing for compliance with the recommended protection zones. Additionally, the project arborist shall inspect the fencing at the onset of each phase of construction. The root protection zone for trees is specified as the 'canopy radius' in Appendix 2 in the arborist report unless otherwise specified by the arborist. Note 'dripline' is not an acceptable location for installation of tree protection fencing.
3. The project arborist should directly supervise any clearance pruning, irrigation, fertilization, placement of mulch and/or chemical treatments. If clearance pruning is required, the Project Arborist should approve the extent of foliage elevation and oversee the pruning to be performed by a contractor who is an ISA Certified Arborist. Clearance pruning should include removal of all the lower foliage that may interfere with equipment PRIOR to having grading or other equipment on site.
4. No trunk within the root protection zone of any trees shall be removed using a backhoe or other piece of grading equipment.
5. Clearly designate an area on the site that is outside of the protection area of all trees where construction materials may be stored, and parking can take place. No materials or parking shall take place within the protection zones of any trees on or off the site.
6. Any and all work to be performed inside the protected root zone fencing, including all grading and utility trenching, shall be approved and/or supervised by the project arborist.
7. Trenching, if required, inside the protected root zone shall be approved and/or supervised by the project arborist and may be required to be performed by hand, by a hydraulic or air spade, or other method which will place pipes underneath the roots without damage to the roots.
8. The root protection zone for trees is specified as the 'canopy radius' in Appendix 2 in the arborist report unless otherwise specified by the arborist. Note 'dripline' is not an acceptable location for installation of tree protection fencing.



S-X TREE PROTECTION

Document Path: F:\Personal- net\CalTLC\Maps 2020\Rio Linda Blvd\RioLindaBlvd.mxd

ALL TREES SURVEYED
LOCATION MAP

>Tree locations are approximate and were collected using ISO apple products.
>Property line information was downloaded from Sacramento County on 08/12/2020.
>Development plans provided by Baker Williams Engineering Group dated 07/2020.

Property Line
Measured Tree Canopy
Tree Protection Fencing

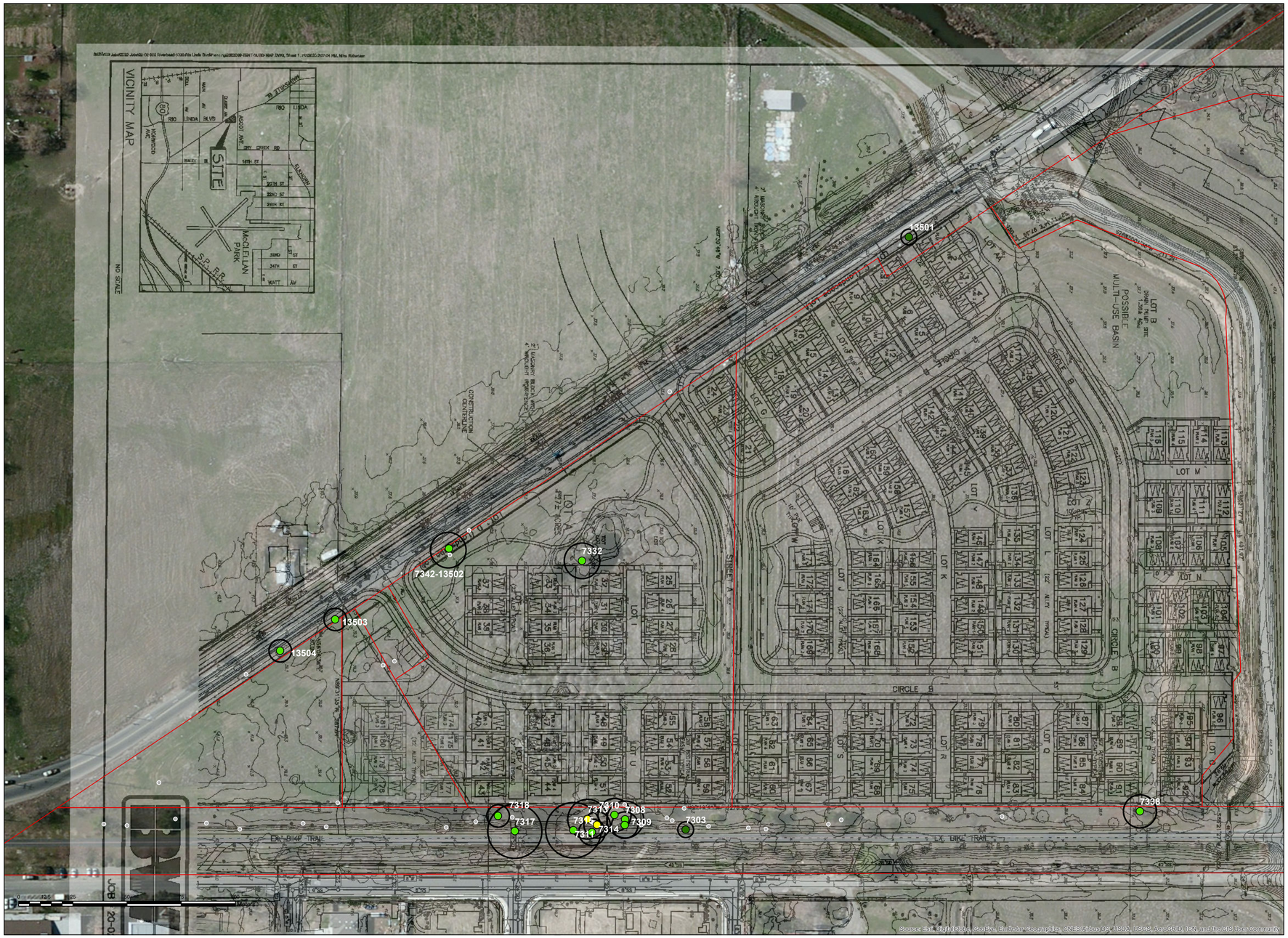
Arborist Rating
- 0 Dead
- 1 Extreme Structure or Health Problems
- 2 Major Structure or Health Problems
- 3 Fair - Minor Problems
- 4 Good - No Apparent Problems
- 5 Excellent

ROBLA ESTATES

5330 Rio Linda Blvd
City of Sacramento, Sacramento County, CA

Sheet No.
TPP 1.0

Date: 8/13/2020

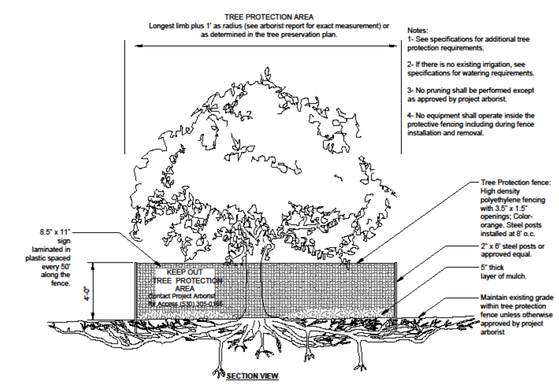


California Tree & Landscape Consulting, Inc.

1243 High Street
Auburn, CA 95603

TREE PROTECTION GENERAL REQUIREMENTS

1. The project arborist for this project is California Tree & Landscape Consulting. The primary contact information is Nicole Harrison (530) 305-0165. The project arborist may continue to provide expertise and make additional recommendations during the construction process if and when additional impacts occur or tree response is poor. Monitoring and construction oversight by the project arborist is recommended for all projects and required when a final letter of assessment is required by the jurisdiction.
2. The project arborist should inspect the exclusionary root protection fencing installed by the contractors prior to any grading and/or grubbing for compliance with the recommended protection zones. Additionally, the project arborist shall inspect the fencing at the onset of each phase of construction. The root protection zone for trees is specified as the 'canopy radius' in Appendix 2 in the arborist report unless otherwise specified by the arborist. Note 'dripline' is not an acceptable location for installation of tree protection fencing.
3. The project arborist should directly supervise any clearance pruning, irrigation, fertilization, placement of mulch and/or chemical treatments. If clearance pruning is required, the Project Arborist should approve the extent of foliage elevation and oversee the pruning to be performed by a contractor who is an ISA Certified Arborist. Clearance pruning should include removal of all the lower foliage that may interfere with equipment PRIOR to having grading or other equipment on site.
4. No trunk within the root protection zone of any trees shall be removed using a backhoe or other piece of grading equipment.
5. Clearly designate an area on the site that is outside of the protection area of all trees where construction materials may be stored, and parking can take place. No materials or parking shall take place within the protection zones of any trees on or off the site.
6. Any and all work to be performed inside the protected root zone fencing, including all grading and utility trenching, shall be approved and/or supervised by the project arborist.
7. Trenching, if required, inside the protected root zone shall be approved and/or supervised by the project arborist and may be required to be performed by hand, by a hydraulic or air spade, or other method which will place pipes underneath the roots without damage to the roots.
8. The root protection zone for trees is specified as the 'canopy radius' in Appendix 2 in the arborist report unless otherwise specified by the arborist. Note 'dripline' is not an acceptable location for installation of tree protection fencing.



S-X TREE PROTECTION

URBAN TREE FOUNDATION © 2014
OPEN SOURCE FREE TO USE

Document Path: F:\Personal- net\CalTLC\Maps 2020\Rio Linda Blvd\RioLindaBlvd.mxd

PROTECTED TREES
LOCATION MAP

>Tree locations are approximate and were collected using ISO apple products.
>Property line information was downloaded from Sacramento County on 08/12/2020.
>Development plans provided by Baker Williams Engineering Group dated 07/2020.

Property Line	**Arborist Rating**
Measured Tree Canopy	0 Dead
Tree Protection Fencing	1 Extreme Structure or Health Problems
Not Protected	2 Major Structure or Health Problems
	3 Fair - Minor Problems
	4 Good - No Apparent Problems
	5 Excellent

ROBLA ESTATES

5330 Rio Linda Blvd
City of Sacramento, Sacramento County, CA

Sheet No.
TPP 1.0

Date: 8/18/2020

Appendix 2 – Tree Data

Field Tag #	City Tree #	Protected by Code	Offsite	Species Common Name	Species Botanical Name	DBH	Measured at	Canopy Radius	Arborist Rating	Dvlpmt Status	Notes
7301		No	Yes	Almond	Prunus dulcis	9	54	15	3 Fair - Minor Problems		Tree is in drainage ditch trunk lean 20% minor damage to trunk area at base
7302		No	Yes	Aleppo Pine	Pinus halepensis	6	54		0 Dead		Totally dead previously burned
7303		No	Yes	Valley Oak	Quercus lobata	8	54	12	4 Good - No Apparent Problems		Young tree no apparent problems
7304		No	Yes	Almond	Prunus dulcis	14	54	18	3 Fair - Minor Problems		Multi stem almond small branch inclusions gummossis at base
7305		No	Yes	Almond	Prunus dulcis	12	54	16	3 Fair - Minor Problems		Understory tree Leans west. Dead branches and canopy touching the ground
7307		No	Yes	Cottonwood	Populus fremontii	14	54	15	2 Major Structure or Health Problems		Split trunk lots of decay on tension side
7308		Private Protected	Yes	Valley Oak	Quercus lobata	12	54	28	3 Fair - Minor Problems		Understory tree to 2 dominant Valley Oaks to the east. no major problems dead branches
7309		Private Protected	Yes	Valley Oak	Quercus lobata	16	54	20	3 Fair - Minor Problems		Dead and crossing limbs, no major problems
7310		Private Protected	Yes	Valley Oak	Quercus lobata	18	54	25	3 Fair - Minor Problems		Dead and crossing limbs, no major problems

Field Tag #	City Tree #	Protected by Code	Offsite	Species Common Name	Species Botanical Name	DBH	Measured at	Canopy Radius	Arborist Rating	Dvlpmt Status	Notes
7311		Private Protected	Yes	Cottonwood	Populus fremontii	26	54	20	2 Major Structure or Health Problems		Severe decline broken tops one large spar fell over - decay at base
7312		No	Yes	Cottonwood	Populus fremontii	8	54	10	0 Dead		Completely dead tree
7313		Private Protected	Yes	Cottonwood	Populus fremontii	26	54	30	2 Major Structure or Health Problems		45° Lean, Decay in large broken branches
7314		Private Protected	Yes	Valley Oak	Quercus lobata	21	54	20	3 Fair - Minor Problems		Dead Crossing branches
7315		Private Protected	Yes	Valley oak	Quercus lobata	40	54	42	3 Fair - Minor Problems		No major problems dead crossing branches one inclusion at trunk 4 feet up
7316		No	Yes	Valley Oak	Quercus lobata	5	54	6	4 Good - No Apparent Problems		Understory tree, poor branch angles in upper canopy
7317		Private Protected	Yes	Valley Oak	Quercus lobata	38	54	41	3 Fair - Minor Problems		No major problems sparse canopy lots of dead branches.
7318		Private Protected	Yes	Valley Oak	Quercus lobata	16	54	17	3 Fair - Minor Problems		Dead branches and washed away soil from root flare on east side of tree- due to drainage ditch overflow
7319		No	Yes	Black Willow	Salix nigra	14	54	12	3 Fair - Minor Problems		Lots of dead branches dead tops/tips all breakouts in center multi-stem

Field Tag #	City Tree #	Protected by Code	Offsite	Species Common Name	Species Botanical Name	DBH	Measured at	Canopy Radius	Arborist Rating	Dvlpmt Status	Notes
7320		No	Yes	Valley Oak	Quercus lobata	10	54	15	4 Good - No Apparent Problems		No major problems dead branches first branch / bole height is 3 feet off the ground so potential inclusions in the future but no apparent problems currently
7321		No	Yes	Almond	Prunus dulcis	6	54	10	2 Major Structure or Health Problems		Lots of dead branches split trunk bark flaking off at base possibly disc damage to roots
7322		No	Yes	Valley Oak	Quercus lobata	4.5	54	8	3 Fair - Minor Problems		Multi-stem Bole height 8 inches second spar 3 feet off the ground extremely narrow branch angle
7323		No	Yes	Valley Oak	Quercus lobata	4.5	54	9	3 Fair - Minor Problems		Multi-stem ball height 1 foot off the ground inclusion narrow branch angle
7324		No	Yes	Valley Oak	Quercus lobata	9	54	11	4 Good - No Apparent Problems		Dead branches old trunk wounds at base
7325		No	Yes	Valley Oak	Quercus lobata	6	54	12	3 Fair - Minor Problems		Multi stem bole height 18 inches inclusion poor branch angle
7326		No	Yes	Aleppo Pine	Pinus halepensis	22	54	26	2 Major Structure or Health Problems		Lots of dead branches pitch moth sunken in root flare on one side Frass observed on sunken area
7327		No	Yes	Interior Live Oak	Quercus wislizenii	6	54	12	3 Fair - Minor Problems		Multi-stem Live Oak bole height 10 inches dead branches

Field Tag #	City Tree #	Protected by Code	Offsite	Species Common Name	Species Botanical Name	DBH	Measured at	Canopy Radius	Arborist Rating	Dvlpmt Status	Notes
7328		No	Yes	Tree of heaven	Ailanthus altissima	13	54	20	2 Major Structure or Health Problems		Lots of dead declining tips trunk wound northeast Berks flaking off bore damage from exposed trunk area
7329		No	No	Tree of heaven	Ailanthus altissima	15	54	20	3 Fair - Minor Problems		Bole height 3 feet three spars with inclusions lower bark is flaking off root flare is buried
7330		No	No	Tree of Heaven	Ailanthus altissima	6	54	12	3 Fair - Minor Problems		Bole height 18 inches three main spars bark peeling off construction damage likely disking bark peeling off
7331		No	No	Tree of heaven	Ailanthus altissima	7.5	54	15	3 Fair - Minor Problems		Bole height 6 inches three main spars bark peeling off at base
7332		Private Protected	No	Black Willow	Salix nigra	25	54	27	3 Fair - Minor Problems	Impacted	Multi-stem Lots of dead branches canopy is sparse flood area
7333		No	Yes	Aleppo Pine	Pinus halepensis	13	54	16	2 Major Structure or Health Problems		Lots of dead branches Tree was burned in the past pitch tubes pitch Moth signs of bore sunken root flare large wound north east on trunk at base.
7334		No	Yes	Aleppo Pine	Pinus halepensis	22	54	28	2 Major Structure or Health Problems		Tree leans south west , was burned previously pitch tubes activity Frass large wound north east side of tree wound approximately 10 feet long- 10 inch branch failure

Field Tag #	City Tree #	Protected by Code	Offsite	Species Common Name	Species Botanical Name	DBH	Measured at	Canopy Radius	Arborist Rating	Dvlpmt Status	Notes
7335		No	Yes	Aleppo Pine	Pinus halepensis	16	54	16	3 Fair - Minor Problems		Absent of root flare pitch months dead branches
7336		No	Yes	Aleppo Pine	Pinus halepensis	15	54	15	3 Fair - Minor Problems		Pitch tubes signs of bore actually likely red Turpintine beetle - dead branches
7337		No	Yes	Valley Oak	Quercus lobata	10	54	10	3 Fair - Minor Problems		Multi stem to spars two 10 inch Inclusion 6 feet up
7338		Private Protected	Yes	Valley Oak	Quercus lobata	16	54		3 Fair - Minor Problems	Impacted	Foliage is good dead branches lower canopy included bark at most branch unions bole height 3 feet and absent of root flare
7339		No	No	Almond	Prunus dulcis	5	54	5	0 Dead	Proposed for Removal	Totally dead
7340		No	Yes	Almond	Prunus dulcis	4	54	5	1 Extreme Structure or Health Problems		Half dead. Previously tree fell over and then sprouted back
7341		No	No	Oregon Ash	Fraxinus latifolia	9	54	10	1 Extreme Structure or Health Problems	Proposed for Removal	At base tree was 25 inches old decayed spar, trunk is completely rotten decay all the way through trunk 9 inch spar above decay
7342	**13502**	**Street**	**No**	**Valley Oak**	**Quercus lobata**	**16**	**54**	**15**	**3 Fair - Minor Problems**	**TBD**	**Tree is under distribution lines hangs over Road**
7343		No	No	Blue Oak	Quercus douglasii	8	54	9	4 Good - No Apparent Problems	TBD	Small trunk wound

Field Tag #	City Tree #	Protected by Code	Offsite	Species Common Name	Species Botanical Name	DBH	Measured at	Canopy Radius	Arborist Rating	Dvlpmt Status	Notes
7344		No	No	Blue Oak	Quercus douglasii	5	54	10	4 Good - No Apparent Problems	TBD	No apparent problems but it's 3 feet off the road and under powerlines
1	**13501**	**Street**	**No**	**Chinese Evergreen Elm**	**Ulmus**	**0-3**	**54**	**10**	**3 Fair - Minor Problems**	**TBD**	
2	**13503**	**Street**	**No**	**Tree of Heaven**	**Ailanthus altissima**	**0-3**	**54**	**10**	**3 Fair - Minor Problems**	**TBD**	
3	**13504**	**Street**	**No**	**Tree of Heaven**	**Ailanthus altissima**	**0-3**	**54**	**10**	**3 Fair - Minor Problems**	**TBD**	

APPENDIX 3
GENERAL PRACTICES FOR TREE PROTECTION

Definitions

Root zone: The roots of trees grow fairly close to the surface of the soil, and spread out in a radial direction from the trunk of tree. A general rule of thumb is that they spread 2 to 3 times the radius of the canopy, or 1 to 1 ½ times the height of the tree. It is generally accepted that disturbance to root zones should be kept as far as possible from the trunk of a tree.

Inner Bark: The bark on large valley oaks and coast live oaks is quite thick, usually 1" to 2". If the bark is knocked off a tree, the inner bark, or cambial region, is exposed or removed. The cambial zone is the area of tissue responsible for adding new layers to the tree each year, so by removing it, the tree can only grow new tissue from the edges of the wound. In addition, the wood of the tree is exposed to decay fungi, so the trunk present at the time of the injury becomes susceptible to decay. Tree protection measures require that no activities occur which can knock the bark off the trees.

Methods Used in Tree Protection:

No matter how detailed Tree Protection Measures are in the initial Arborist Report, they will not accomplish their stated purpose unless they are applied to individual trees and a Project Arborist is hired to oversee the construction. The Project Arborist should have the ability to enforce the Protection Measures. The Project Arborist should be hired as soon as possible to assist in design and to become familiar with the project. He must be able to read and understand the project drawings and interpret the specifications. He should also have the ability to cooperate with the contractor, incorporating the contractor's ideas on how to accomplish the protection measures, wherever possible. It is advisable for the Project Arborist to be present at the Pre-Bid tour of the site, to answer questions the contractors may have about Tree Protection Measures. This also lets the contractors know how important tree preservation is to the developer.

Root Protection Zone (RPZ): Since in most construction projects it is not possible to protect the entire root zone of a tree, a Root Protection Zone is established for each tree to be preserved. The minimum Root Protection Zone is the area underneath the tree's canopy (out to the dripline, or edge of the canopy), plus 10'. The Project Arborist must approve work within the RPZ.

Irrigate, Fertilize, Mulch: Prior to grading on the site near any tree, the area within the Tree Protection fence should be fertilized with 4 pounds of nitrogen per 1000 square feet, and the fertilizer irrigated in. The irrigation should percolate at least 24 inches into the soil. This should be done no less than 2 weeks prior to grading or other root disturbing activities. After irrigating, cover the RPZ with at least 12" of leaf and twig mulch. Such mulch can be obtained from chipping or grinding the limbs of any trees removed on the site. Acceptable mulches can be obtained from nurseries or other commercial sources. Fibrous or shredded redwood or cedar bark mulch shall not be used anywhere on site.

Fence: Fence around the Root Protection Zone and restrict activity therein to prevent soil compaction by vehicles, foot traffic or material storage. The fenced area shall be off limits to all construction equipment, unless there is express written notification provided by the Project Arborist, and impacts are discussed and mitigated prior to work commencing.

No storage or cleaning of equipment or materials, or parking of any equipment can take place within the fenced off area, known as the RPZ.

The fence should be highly visible, and stout enough to keep vehicles and other equipment out. I recommend the fence be made of orange plastic protective fencing, kept in place by t-posts set no farther apart than 6'.

In areas of intense impact, a 6' chain link fence is preferred.

In areas with many trees, the RPZ can be fenced as one unit, rather than separately for each tree.

Where tree trunks are within 3' of the construction area, place 2" by 4" boards vertically against the tree trunks, even if fenced off. Hold the boards in place with wire. Do not nail them directly to the tree. The purpose of the boards is to protect the trunk, should any equipment stray into the RPZ.

Elevate Foliage: Where indicated, remove lower foliage from a tree to prevent limb breakage by equipment. Low foliage can usually be removed without harming the tree, unless more than 25% of the foliage is removed. Branches need to be removed at the anatomically correct location in order to prevent decay organisms from entering the trunk. For this reason, a contractor who is an ISA Certified Arborist should perform all pruning on protected trees.[2]

Expose and Cut Roots: Breaking roots with a backhoe, or crushing them with a grader, causes significant injury, which may subject the roots to decay. Ripping roots may cause them to splinter toward the base of the tree, creating much more injury than a clean cut would make. At any location where the root zone of a tree will be impacted by a trench or a cut (including a cut required for a fill and compaction), the roots shall be exposed with either a backhoe digging radially to the trunk, by hand digging, or by a hydraulic air spade, and then cut cleanly with a sharp instrument, such as chainsaw with a carbide chain. Once the roots are severed, the area behind the cut should be moistened and mulched. A root protection fence should also be erected to protect the remaining roots, if it is not already in place. Further grading or backhoe work required outside the established RPZ can then continue without further protection measures.

Protect Roots in Deeper Trenches: The location of utilities on the site can be very detrimental to trees. Design the project to use as few trenches as possible, and to keep them away from the major trees to be protected. Wherever possible, in areas where trenches will be very deep, consider boring under the roots of the trees, rather than digging the trench through the roots. This technique can be quite useful for utility trenches and pipelines.

Protect Roots in Small Trenches: After all construction is complete on a site, it is not unusual for the landscape contractor to come in and sever a large number of "preserved" roots during the installation of irrigation systems. The Project Arborist must therefore approve the landscape and irrigation plans. The irrigation system needs to be designed so the main lines are located outside the root zone of major trees, and the secondary lines are either laid on the surface (drip systems), or carefully dug with a hydraulic or air spade, and the flexible pipe fed underneath the major roots.

[2] International Society of Arboriculture (ISA), maintains a program of Certifying individuals. Each Certified Arborist has a number and must maintain continuing education credits to remain Certified.

Design the irrigation system so it can slowly apply water (no more than ¼" to ½" of water per hour) over a longer period of time. This allows deep soaking of root zones. The system also needs to accommodate infrequent irrigation settings of once or twice a month, rather than several times a week.

Monitoring Tree Health During and After Construction: The Project Arborist should visit the site at least twice a month during construction to be certain the tree protection measures are being followed, to monitor the health of impacted trees, and make recommendations as to irrigation or other needs. After construction is complete, the arborist should monitor the site monthly for one year and make recommendations for care where needed. If longer term monitoring is required, the arborist should report this to the developer and the planning agency overseeing the project.

Appendix 4 – Site Photos

Photo 1, Historical Google Photo.

Photo 2, August 18, 2020. Looking south down the bike path

Photo 3, August 18, 2020. Looking north. Demonstrates Trees inside and outside the survey area

APPENDIX C
BIOLOGICAL RESOURCES ASSESSMENT

BIOLOGICAL RESOURCES ASSESSMENT
FOR THE

±25.8-ACRE ROBLA ESTATES STUDY AREA

CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA

Prepared for:

Ralph Swift
Swift Construction and Development
P.O. Box 3038
Granite Bay, CA 95746

Prepared by:

Salix consulting, inc.
11601 Blocker Drive, Ste. 100
Auburn, California 95603
(530) 888-0130

JUNE 2020

TABLE OF CONTENTS

Introduction **1**

Project Location 1
Project Setting 1
Objectives of Biological Resources Assessment 1

Methods **1**

Literature Review 1
Special-Status Species Reports 4
Field Assessments 4

Survey and Literature Search Results **5**

Soils 5
Biological Communities 6
Ruderal Grassland 6
Mixed Woodland 11
Wetland Swale 12
Wildlife Occurrence and Use 12
Special-Status Species 13
Plants 13
Animals 17

Recommendations **20**

Waters of the United States 20
Streams, Pond, and Riparian Habitat 20
Tree Conservation 21
Special-Status Plants 21
Special-Status Wildlife 21
Aquatic Invertebrates 21
Burrowing Owl 21
Nesting Raptors and Migratory Birds 22

References and Other Resources **23**

FIGURES

Figure 1. Site & Vicinty 2
Figure 2. Aerial Photograph 3
Figure 3. Habitat Map 7
Figures 4a-c. Site Photos 8-10
Figure 5. CNDDB Special-Status Plant Species Occurrence Locations 15
Figure 5. CNDDB Special-Status Animal Species Occurrence Locations 16

TABLES

Table 1. Special-Status Plant Species Determined to Have Some Potential to Occur Within the Lund Study Area 13-14
Table 2. Special-Status Animal Species Determined to Have Some Potential to Occur Within the Lund Study Area 18-19

APPENDICES

Appendix A. Plant Species Observed Within the Study Area

Appendix B. Wildlife Species Observed Within the Study Area

Appendix C. Potentially-Occurring Special-Status Plants

Appendix D. Potentially-Occurring Special-Status Animals

Biological Resources Assessment for the ±25.8-ACRE ROBLA ESTATES STUDY AREA

INTRODUCTION

Project Location

Salix Consulting, Inc. (Salix) has prepared a Biological Resources Assessment and Rare Plant Survey for the ±25.8-acre Robla Estates study area located in the vicinity of Northpointe, in the City of Sacramento, Sacramento County, California. The approximate coordinates for the center of the property are latitude 38.66621° and longitude -121.4488°. It is situated within the Del Paso Land Grant (not part of the Township and Range system, which was a survey of federal lands). The parcel is located on the Rio Linda, California 7.5-minute USGS topographic quadrangle (Figure 1).

Project Setting

The site occurs in the eastern Sacramento Valley, south of the unincorporated community of Rio Linda and directly south of the northern edge of the City of Sacramento city limits. The study area is bounded on the west by Rio Linda Boulevard, on the east by a bike trail, and on the north by a gravel access road. The site is mostly flat, with elevations ranging from approximately 45 feet near the northeast corner to 33 feet near an outfall in the northwest corner. Robla Elementary School is located near the southern corner of the study area and suburban residential neighborhoods are located to the south and east of the site. Land to the north and west of the site is mostly undeveloped (Figure 2).

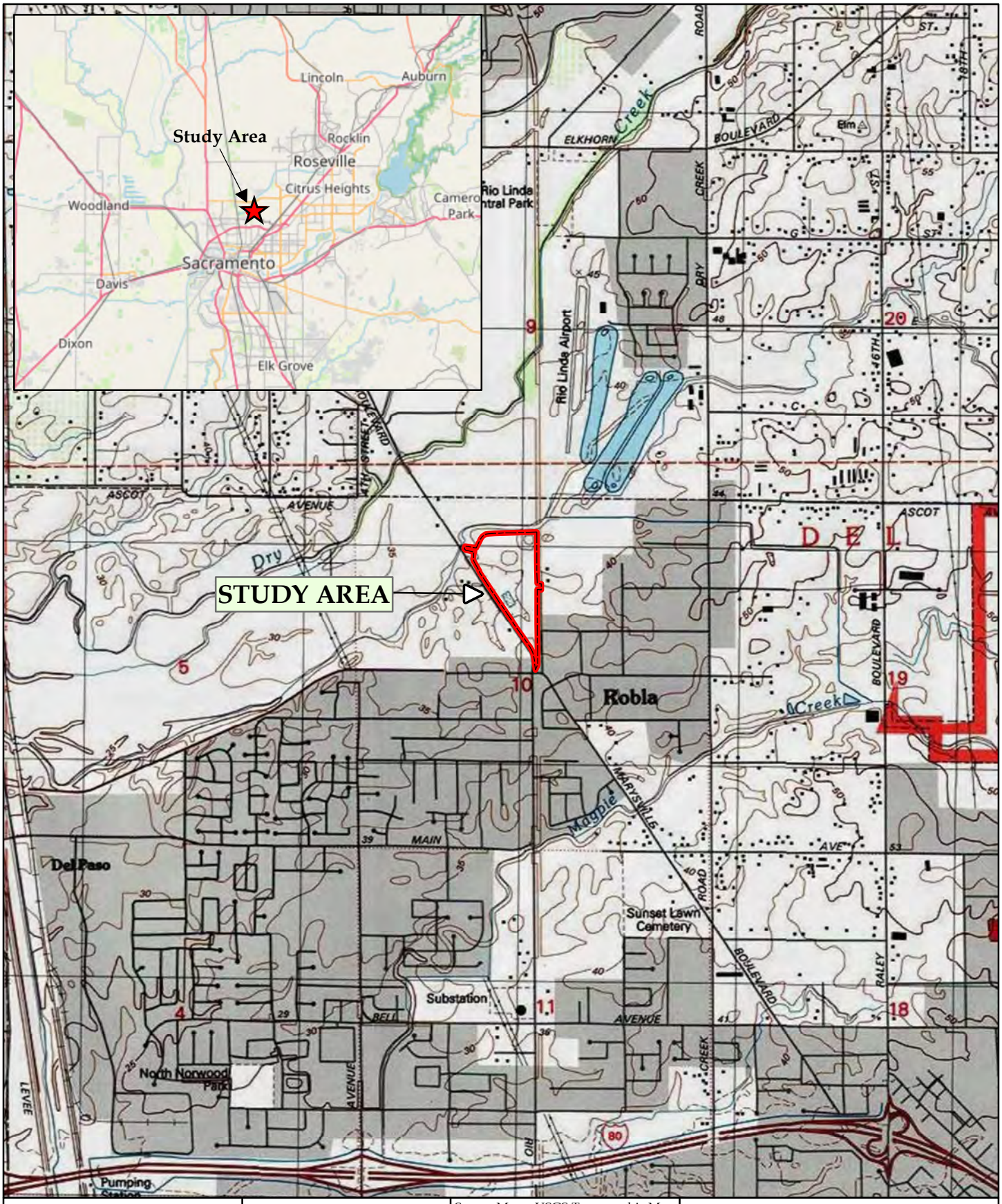
Objectives of Biological Resources Assessment

- Identify and describe the biological communities present in the study area;
- Evaluate and identify if any sensitive habitats or special-status plant and animal species exist or could exist on the site;
- Conduct an analysis to determine if waters of the U.S. are present, and
- Provide conclusions and recommendations.

METHODS

Literature Review

For this analysis, Salix biologists reviewed aerial photographs, USGS maps, and engineering drawings of the proposed tentative map. Standard publications were reviewed to provide information on life history, habitat requirements, and distribution of regionally occurring animal species. Information on soils of the study area was



Salix consulting, inc.

N

0 1,000 2,000

Feet

Source Maps: USGS Topographic Map
Rio Linda Quad 1:24,000
Rancho Del Paso Land Grant

Figure 1

SITE AND VICINITY MAP

Robla Estates

City of Sacramento, Sacramento County, CA

Salix consulting, inc.

N

0 125 250

Feet

Study Area (±25.8 acres)

Project Boundary (±21.1 acres)

Imagery provided by:
Baker-Williams Engineering Group, May 2020
Overlaid on Sac Regional GIS Coop, March 2018

Figure 2

AERIAL MAP

Robla Estates

City of Sacramento, Sacramento County, CA

obtained from the U.S. Department of Agriculture – National Resource Conservation Service's online Web Soil Survey (NRCS 2020).

Special-Status Species Reports

To assist with the determination of which special-status species could occur within or near the study area Salix biologists queried the California Natural Diversity Data Base (CDFW 2020) and the California Native Plant Society Inventory (CNPS 2020) and the U.S. Fish and Wildlife Service Information for Planning and Consultation (USFWS IPaC 2020) database for reported occurrences of special-status fish, wildlife, and plant species in the region surrounding the study area. The four-quadrangle search area included the Rio Linda, Citrus Heights, Sacramento East, and Taylor Monument USGS quadrangles. In addition, Salix biologists reviewed the California Department of Fish and Wildlife list of Species of Special Concern for the project vicinity.

For the purposes of this report, special-status species are those that fall into one or more of the following categories:

- Listed as endangered or threatened under the federal Endangered Species Act (or candidate species, or formally proposed for listing);
- Listed as endangered or threatened under the California Endangered Species Act (or proposed for listing);
- Designated as rare, protected, or fully protected pursuant to California Fish and Game Code;
- Designated a Species of Special Concern by the California Department of Fish and Wildlife, or
- Designated as Ranks 1, 2, or 3 on lists maintained by the California Native Plant Society.

Field Assessments

Field assessments of the study area were conducted by Salix biologists Jeff Glazner and Joelle Soch on May 3 and June 3, 2020 to characterize existing conditions, to assess the potential for sensitive plant and wildlife resources to occur, and to determine if waters of the U.S. were present onsite. During the field assessments, biological communities were mapped and assessed for the potential to support special status species, plants and animals observed were documented, and ground photos were taken.

A botanical survey was conducted by Jeff Glazner to determine the presence or absence of regionally-occurring rare plant species. The survey was timed to coincide with the best chance of detecting potentially-occurring special-status plant species, if present. All areas of the site were observed, with a particular focus given to habitats that are most likely to support regionally-occurring special-status species (wetlands). The survey was floristic in nature and all species observed were identified to the taxonomic level necessary to determine rarity.

Plants observed are listed in Appendix A; animals observed are listed in Appendix B. Plant names are according to The Jepson Manual: Vascular Plants of California, Second

Edition (Baldwin et. al. 2012) and updated literature that supersedes the Jepson Manual. Standard manuals were used as needed to identify wildlife species observed.

SURVEY AND LITERATURE SEARCH RESULTS

Soils

Four soil units have been mapped on the property: Andregg coarse sandy loam, 2 to 9 percent slopes, Andregg-Rock outcrop complex, 5 to 30 percent slopes, Xerorthents, cut and fill areas and Xerorthents, placer areas (NCRS 2020). The components of each complex are described below.

Cosumnes silt loam, drained, 0 to 2 percent slopes, occasionally flooded

The Cosumnes component, which makes up 85 percent of the map unit, is found in valleys and narrow low flood plains. Its parent material consists of alluvium and its natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. This soil is occasionally flooded, is not ponded, and meets hydric criteria. There is no zone of water saturation within a depth of 72 inches and there are no saline horizons within 30 inches of the soil surface.

Liveoak sandy clay loam, 0 to 2 percent slopes, occasionally flooded

The Liveoak component, which makes up 85 percent of the map unit, is found on narrow high flood plains and valleys. Its parent material consists of alluvium derived from granite, and its natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. This soil is occasionally flooded, is not ponded, and does not meet hydric criteria. There is no zone of water saturation within a depth of 72 inches.

Madera loam, 0 to 2 percent slopes

The Madera component, which makes up 85 percent of the map unit, is found in valleys and low areas on low terraces. Its parent material consists of alluvium derived from granite and its natural drainage class is moderately well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. This soil is not flooded, is not ponded, and does not meet hydric criteria. There is no zone of water saturation within a depth of 72 inches. There are no saline horizons within 30 inches of the soil surface.

San Joaquin-Urban land complex, 0 to 3 percent slopes

The San Joaquin component, which makes up 65 percent of the map unit, is found in valleys and low terraces. Its parent material consists of alluvium derived from granite, and its natural drainage class is moderately well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth)

is low. This soil is not flooded, is not ponded, and does not meet hydric criteria. There is no zone of water saturation within a depth of 72 inches.

The urban land component, which makes up 25 percent of the map unit, is a miscellaneous area.

Climate

The study area has a Mediterranean climate with cool, wet winters and hot, dry summers. The average high temperature is 74°, with the hottest months being July and August, averaging 93° and 92°, respectively. The low temperatures for these months averages 58° each month. The coolest months are December and January, averaging a high temperature of 54° and a low temperature of 38° each month. Annual precipitation averages 17.2 inches, nearly all of which occurs as rainfall between October and April. The wettest months are December, January, and February, each averaging more than 3 inches of rainfall.

Hydrology

The site occurs in the Lower Steelhead Creek HUC12 (180201110303) part of the greater Lower American HUC8 watershed (18020111). Surface water in the southern half of the site trends toward one of three features. A seasonal wetland located near the western boundary collects on-site surface water, while two seasonal wetlands located along the eastern boundary receive surface water runoff from a drainage east of the bike path. The three seasonal wetlands have no drainage outlet, and water within the wetlands evaporates or percolates into the ground.

Surface water in the northern portion of the study area trends toward a ditch along the base of a levee that follows the northern boundary of the study site. Water in the ditch passes through an outfall underneath the levee near the northwest corner of the study area before exiting the site and draining into Robla Creek. Robla Creek continues southwest for approximately 2 miles before draining into Steelhead Creek. Water in Steelhead Creek flows in a southwesterly direction for approximately 8 miles before draining into the Lower American and Sacramento Rivers near Discovery Park in Sacramento, CA.

Biological Communities

Two biological community are mapped within the study area – ruderal grassland and mixed woodland, as illustrated in Figure 3. Representative ground photos of the property are presented in Figures 4a-4c. Potential waters of the U.S. are embedded within the ruderal grassland and are mapped in the wetland delineation to be submitted under separate cover. These areas are discussed briefly below under "Potential Waters of the U.S."

Ruderal Grassland

The majority of the study area, approximately 24.5 acres, is disturbed annual grassland (ruderal). This habitat type consists mostly of weedy annual grasses and forbs and is

Salix consulting, inc.

N

0 125 250

Feet

Study Area (±25.8 acres)

Wetlands

Offsite Wetlands

Drainage Ditch

Imagery provided by:
Baker-Williams Engineering Group, May 2020
Overlaid on Sac Regional GIS Coop, March 2018

Figure 3

HABITAT COMPONENTS

Robla Estates

City of Sacramento, Sacramento County, CA

Looking southeast along Rio Linda Boulevard. *Photo Date: 5-03-20.*

Looking south from near northeast corner of study area.
Photo Date: 5-03-20.

Salix consulting, inc.

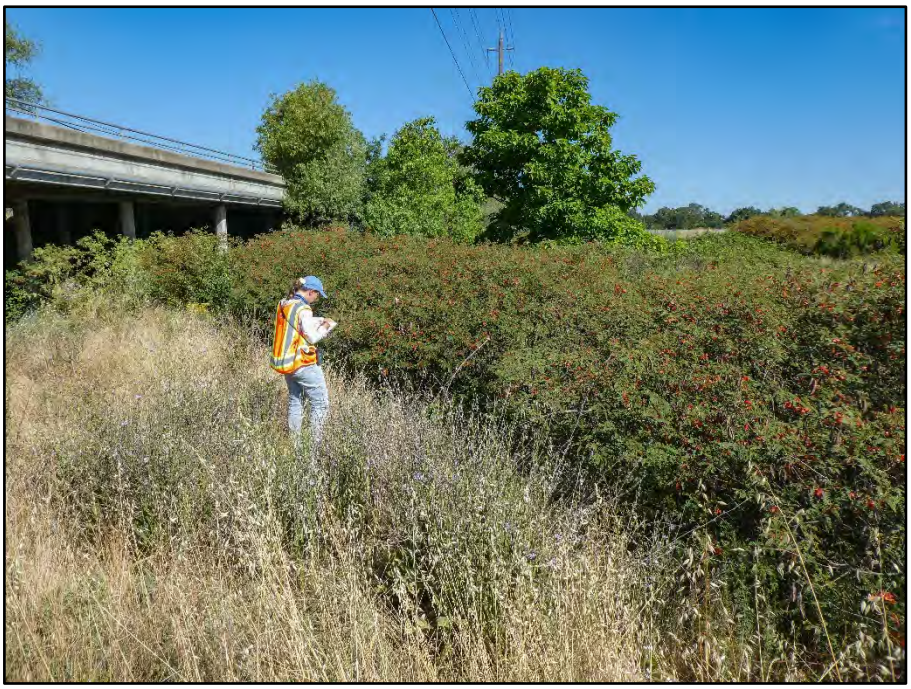
Figure 4a

SITE PHOTOS

Robla Estates

City of Sacramento, Sacramento County, CA

Looking east along northern boundary from levee. *Photo Date: 5-03-20.*



Swale that drains study area into Robla Creek. Dense population of red sesbania along swale. *Photo Date: 6-03-20.*

Salix consulting, inc.

Figure 4b

SITE PHOTOS

Robla Estates

City of Sacramento, Sacramento County, CA

Seasonal wetland 1 with Goodding's willow. *Photo Date: 6-03-20.*

From bike path, looking northwest over Seasonal Wetlands 2 and 3 into study area. *Photo Date: 5-03-20.*

Salix consulting, inc.

Figure 4c

SITE PHOTOS

Robla Estates

City of Sacramento, Sacramento County, CA

regularly disked. Woody vegetation is minimal, represented by scattered trees and saplings, mostly in the southern portion of the site where tree of heaven (*Ailanthus altissima*) is scattered. Common species throughout the ruderal grassland include wild oat (*Avena fatua*), Italian ryegrass (*Festuca perennis*), ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), yellow starthistle (*Centaurea solstitialis*), rose clover (*Trifolium hirtum*), red-stemmed filaree (*Erodium botrys*), English plantain (*Plantago lanceolata*), Italian thistle (*Carduus pycnocephalus*), turkey mullein (*Croton setiger*), pricky lettuce (*Lactuca serriola*), and ruby sand-spurrey (*Spergularia rubra*).

Mixed Woodland

Approximately 1.3 acres of the study area, located primarily along the eastern boundary following the bike trail, is mixed woodland. The mixed woodland is composed of native trees including valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*) and Goodding's black willow (*Salix gooddingii*) interspersed with planted trees and non-native species including silk tree (*Albizia julibrissin*), peach (*Prunus persica*), tree of heaven and ornamental pine (*Pinus sp.*). The herbaceous layer, which is regularly mowed, contains many of the same species as the ruderal grassland described above.

Potential Waters of the U.S

A wetland delineation has been conducted on the site and will be submitted under separate cover. Two categories of potential waters of the United States have been mapped on the study area, including three seasonal wetlands and one wetland swale for a total of 0.455 acre.

Seasonal Wetland

- SW-1, 0.120 ac
- SW-2, 0.119 ac
- SW-3, 0.196 ac

Wetland Swale

- WS-1, 0.020 ac

Seasonal Wetland 1 (SW-1), which appears to be an excavated feature, is located in the western area of the site. It is approximately three feet deep and has exposed hardpan in the bottom. It supports a variable flora of mostly annual species, the most abundant being annual beard grass (*Polypogon monspeliensis*). Stalked popcorn-flower (*Plagiobothrys stipitatus*) is abundant in the basin as is prickly lettuce (*Lactuca serriola*), Italian ryegrass, curly dock (*Rumex crispus*) and creeping spikerush (*Eleocharis macrostachya*). One large Goodding's black willow also grows in the middle of the seasonal wetland (Figure 4b).

Seasonal Wetland 2 (SW-2) is located along the eastern study area boundary and is generally a low area of the field near the outfall of a storm drain originating in the subdivision just east of the study area. The wetland supports a mix of seasonal wetland and vernal pool species including spikerush, purslane speedwell (*Veronica peregrina* subsp. *xalapensis*), double-horned downingia (*Downingia bicornuta* var. *bicornuta*), common knotweed (*Polygonum aviculare*), and hyssop loosestrife (*Lythrum hyssopifolia*).

The wetland is quite compromised by frequent disking and the subtle edge of the wetland is covered by dense Italian ryegrass (Figure 4c).

Seasonal Wetland 3 (SW-3) is adjacent to SW-2 but it is situated between the fence line and the bike trail within the mixed woodland strip. It is not as frequently disturbed and has a more well-defined edge. It contains more organic matter and is sparsely vegetated by Italian ryegrass, curly dock, and other wetland generalists (Figure 4c).

Wetland Swale

A wetland swale is mapped between the levee near Robla Creek to Robla Creek. This constructed swale originates at an outfall situated beneath the levee, which drains ditches located on the south side of the levee. The swale supports a dense population of red sesbania (*Sesbania punicea*). The herbaceous layer in the upper portion of the swale near the levee is mostly Bermudagrass (*Cynodon dactylon*), while the lower portion of the swale (near the confluence with Robla Creek) receives backwater from the creek and supports a mix of marsh species (Figure 4a).

Wildlife Occurrence and Use

The study area, which is bordered on one side by a busy avenue and on the other by a heavily trafficked bike trail, is regularly disked and occurs in a suburban area with high human activity. Due to the disturbed nature of the site, quality habitat and species diversity are lacking. However, wire fencing and fence-posts around the perimeter of the property provide perches, and mixed woodland along the eastern boundary provides foraging and nesting habitat for many common bird species that are adapted to urban areas. Bird species observed during the site visit include mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), house finch (*Haemorhous mexicanus*), black phoebe (*Sayornis nigricans*), American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), western scrub-jay (*Aphelocoma californica*) and turkey vulture (*Cathartes aura*), among others.

The mixed woodland along the eastern boundary does not contain trees that would provide suitable nesting habitat for larger raptors, and no nests were identified within the study area. However, raptors may nest in more suitable woody vegetation situated along the Robla Creek riparian corridor directly north of the study area and use the site for forage. During the field assessment, a pair of Swainson's hawks (*Buteo swainsoni*) and a pair of Red-tailed hawks (*Buteo jamaicensis*) were observed flying over the site. As no raptor nests were observed on or near the study area, these birds were presumed to be foraging. Numerous cliff swallows (*Petrochelidon pyrrhonota*) observed foraging over the site were found to be nesting underneath the Rio Linda Boulevard bridge over Robla Creek.

The study area also contains piles of broken concrete that could provide shelter to smaller mammals or reptiles. Black-tailed jackrabbit (*Lepus californicus*) and western fence lizard (*Sceloporus occidentalis*) were each observed during the field assessment. In addition, a small population of California ground squirrel (*Spermophilus beecheyi*) and a small number of associated burrows were noted on the property.

Special-Status Species

To determine potentially-occurring special-status species, the standard databases from the USFWS, CDFW (the CNDDB), and CNPS were queried and reviewed. These searches provided a list of regionally occurring species and were used to determine which species have some potential to occur within or near the study area. Appendix C lists potentially-occurring special-status plants, and Appendix D lists special-status animals compiled from our queries as described above. The field survey and the best professional judgment of Salix biologists were used to further refine the tables in Appendices C and D. Additionally, plant species found on the CNPS List 4 are not considered further in the document. Figure 5a shows the approximate locations of reported occurrences of CNDDB special-status plants within a five-mile radius of the study area, and Figure 5b shows the same for reported occurrences of special-status animals.

Plants

Four (4) potentially occurring plant species were identified in the CNDDB and CNPS queries (Appendix C), and all four of these species were identified as occurring within a five-mile radius of the study area (Figure 5a).

One of these species, Sanford's arrowhead (*Sagittaria sanfordii*), was determined to have no potential to occur within the study area due to lack of suitable habitat such as marshes, swamps, or slow-moving streams. Nearby Robla Creek could support this species, but it is located outside of the study area.

Three (3) of the special-status from Appendix C (listed in Table 2 below), were determined to have some potential to occur within the study area and are discussed in further detail below the table.

Table 1.

Special-Status Plant Species Determined to Have Some Potential to Occur Within the Robla Estates Study Area

Species	Status* Federal	State	CNPS	Habitat	Potential for Occurrence Within Study Area**
Dwarf downingia *Downingia pusilla*	-	-	2B.2	Vernal pools and seasonal wetlands.	Unlikely. Marginal habitat present in seasonal wetlands within the study area. This species was not detected during the botanical survey.
Legenere *Legenere limosa*	-	-	1B.1	Vernal pools and seasonal wetlands.	Unlikely. Marginal habitat present in seasonal wetlands within the study area. This species was not detected during the botanical survey.

Species	Status* Federal	State	CNPS	Habitat	Potential for Occurrence Within Study Area**
Bogg's Lake hedge-hyssop *Gratiola heterosepala*	-	-	1B.2	Vernal pools.	Unlikely. Marginal habitat present in seasonal wetlands within the study area. This species was not detected during the botanical survey.

*Status Codes:
CNPS
Rank 1 Rare, Threatened, or Endangered in California
Rank 2 R, T, or E in California, more common elsewhere
1- Seriously threatened in California
2- Fairly threatened in California

**Definitions for the Potential to Occur:
Unlikely. Some habitat may occur, but disturbance may restrict/eliminate the possibility of occurrence. Habitat may be very marginal, or study area is outside range of species.

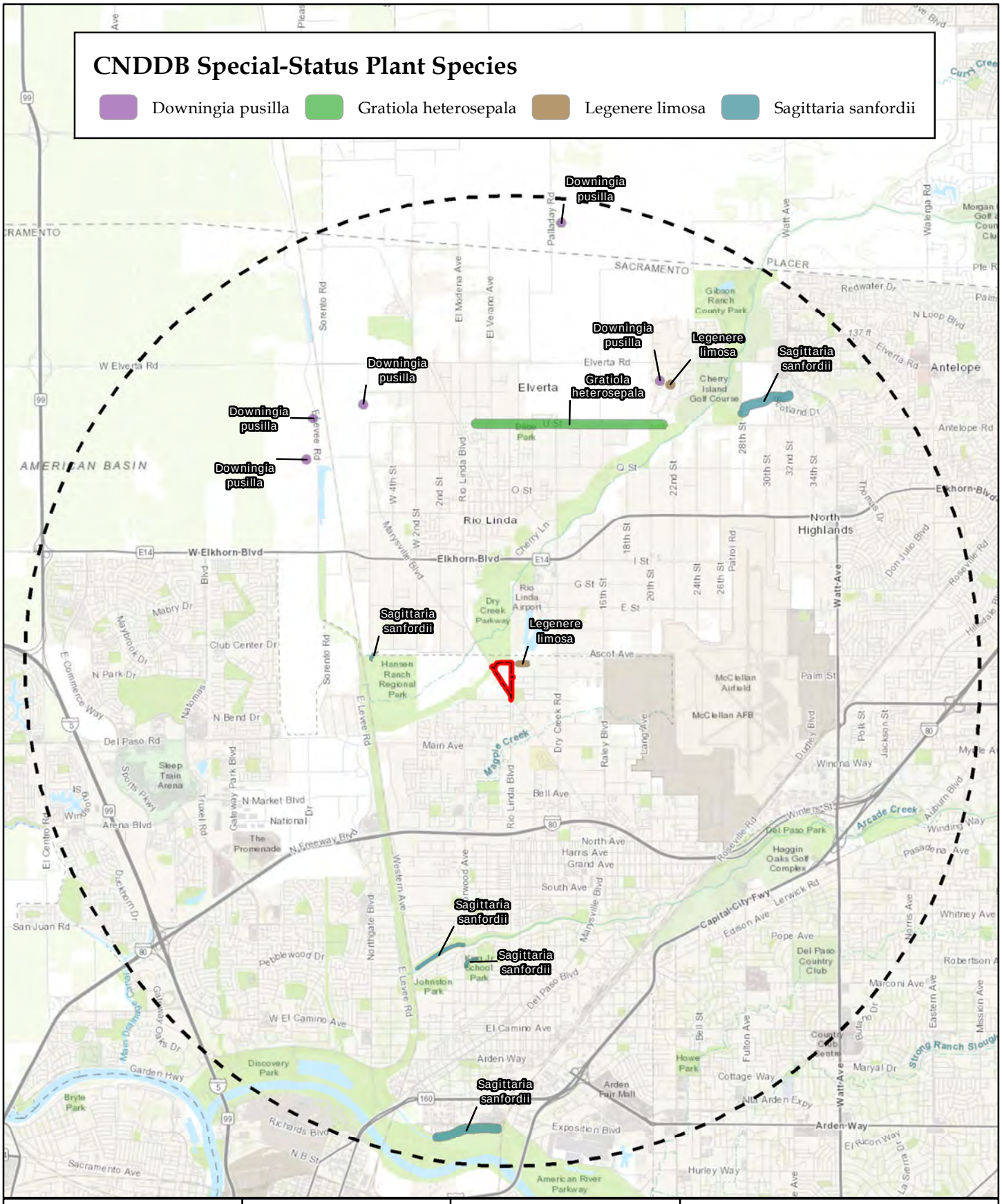
Dwarf downingia (*Downingia pusilla*) is a small annual member of the bellflower family (Campanulaceae). It has no state or federal status. The CNPS places the dwarf downingia on their List 2.2, meaning that, although it is rare in California, it is more widespread elsewhere. Dwarf downingia also occurs in Chile where the type specimen was collected. Dwarf downingia is distinguished from other members of the genus by having very small flowers that are not upside down at blooming time. The species is an obligate wetland plant that occurs primarily in vernal pools. It blooms from March to May, depending on the amount and distribution of winter rains.

The CNNDB documents the nearest reported occurrence of dwarf downingia as an April 1993 observation, approximately 3 miles northwest of the study area, off of East Levee Road in Rio Linda. Because the compromised seasonal wetlands within the study area provide very marginal habitat for dwarf downingia, it was determined that the species has some potential to occur, although unlikely. However, this species was not detected during the botanical survey.

Legenere (*Legenere limosa*) is small annual member of the bellflower family (Campanulaceae). It has no state or federal status, but it is a CNPS List 1B.1 species. It is the only species in the genus and has small, inconspicuous flowers that have pedicels rather than being sessile. Legenere prefers the drying mud of late season vernal pools and swales and it blooms from April to June.

The CNNDB documents the nearest reported occurrence of legenere as a May 1991 observation, approximately 250 feet east of the study area, in a seasonal wetland north of Vinci Avenue and east of Rose Street. Because the compromised seasonal wetlands within the study area provide very marginal habitat for legenere, it was determined that the species has some potential to occur, although unlikely. However, this species was not detected during the botanical survey.

Bogg's Lake hedge-hyssop (*Gratiola heterosepala*) is a small annual member of the figwort family (Scrophulariaceae). It is given endangered status by the state



Salix consulting, inc.

N

0 3,750 7,500

Feet

5-Mile Radius

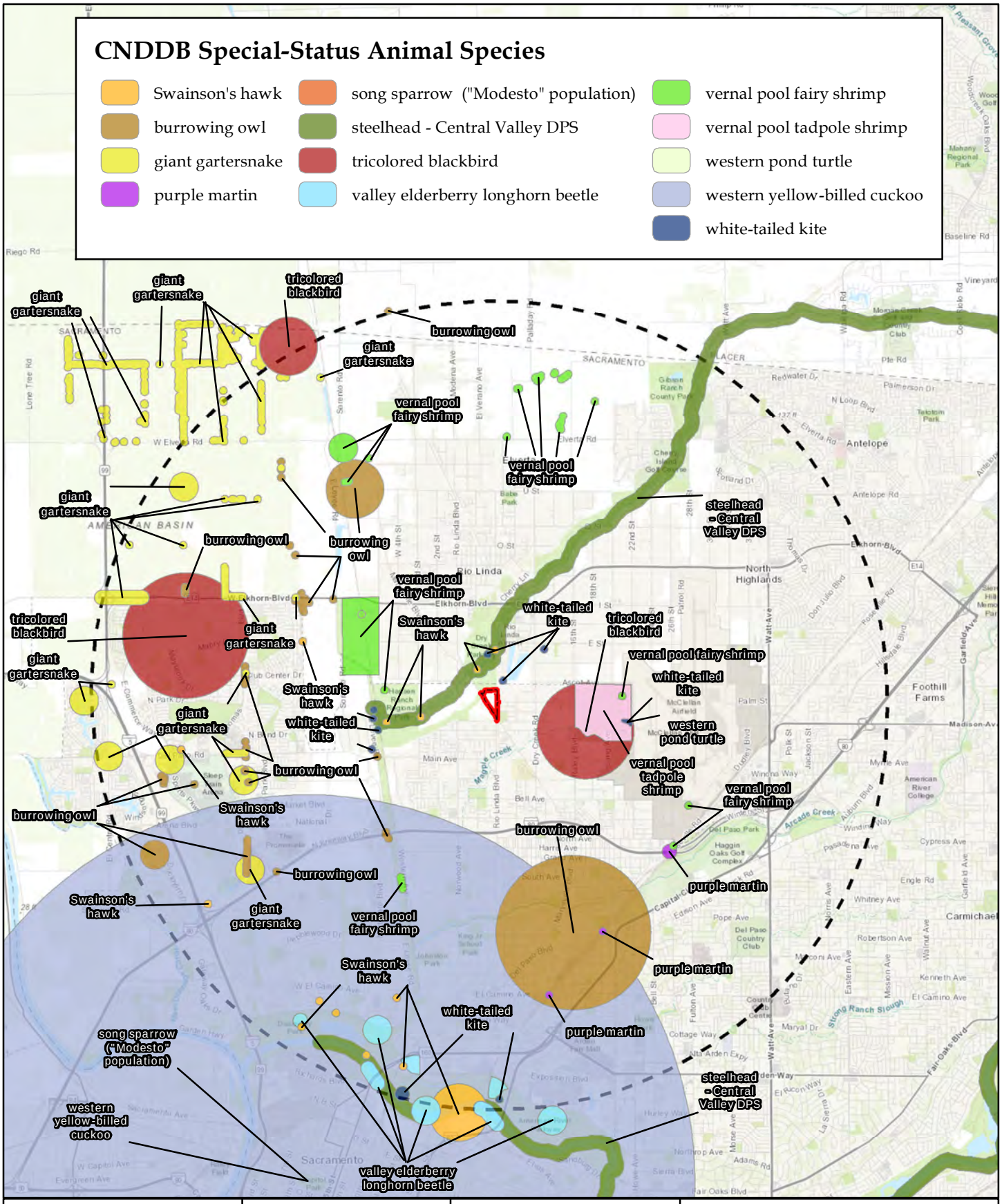
Study Area

Figure 5a

CNDDB OCCURRENCES MAP

Robla Estates

City of Sacramento, Sacramento County, CA


CNDDB Special-Status Animal Species
Swainson's hawk
burrowing owl
giant gartersnake
purple martin
song sparrow ("Modesto" population)
steelhead - Central Valley DPS
tricolored blackbird
valley elderberry longhorn beetle
vernal pool fairy shrimp
vernal pool tadpole shrimp
western pond turtle
western yellow-billed cuckoo
white-tailed kite
giant gartersnake
giant gartersnake
tricolored blackbird
burrowing owl
giant gartersnake
vernal pool fairy shrimp
vernal pool fairy shrimp
giant gartersnake
steelhead - Central Valley DPS
burrowing owl
burrowing owl
vernal pool fairy shrimp
tricolored blackbird
giant gartersnake
Swainson's hawk
white-tailed kite
tricolored blackbird
giant gartersnake
vernal pool fairy shrimp
white-tailed kite
Swainson's hawk
giant gartersnake
white-tailed kite
western pond turtle
burrowing owl
vernal pool tadpole shrimp
vernal pool fairy shrimp
burrowing owl
Swainson's hawk
burrowing owl
burrowing owl
purple martin
Swainson's hawk
giant gartersnake
vernal pool fairy shrimp
purple martin
Swainson's hawk
white-tailed kite
purple martin
song sparrow ("Modesto" population)
steelhead - Central Valley DPS
western yellow-billed cuckoo
valley elderberry longhorn beetle
Salix consulting, inc.
N
0
4,500
9,000
Feet
5-Mile Radius
Study Area
Figure 5b
CNDDB OCCURRENCES MAP
Robla Estates
City of Sacramento, Sacramento County, CA

Endangered Species Act, although it has no federal status. The CNPS places it on its List 1B.2. It differs from the common *G. ebracteata* by having blunt tips on the leaves and sepals, which are smaller and of different lengths. It occurs in vernal pools and the moist margins of marshes in northern California. It blooms from April to June, usually as the pools begin to dry.

The CNNDB documents the nearest reported occurrence of Bogg's Lake hedge-hyssop as an April 1960 observation, approximately 2.5 miles north of the study area, north of U Street in Rio Linda. Because the compromised seasonal wetlands within the study area provide very marginal habitat for legenere, it was determined that the species has some potential to occur, although unlikely. However, this species was not detected during the botanical survey.

In summary, four (4) special-status plants were identified in the database queries as occurring in the greater region surrounding the study area (Appendix C), and all four (4) of these plants are known from within a five-mile radius and are shown in Figure 5a. One (1) of these four (4) plant species, Sanford's arrowhead, requires habitats or substrates that do not occur within the study area, was determined to have no potential for occurring, and was eliminated from further consideration.

Three (3) of the species (listed in Table 1 above) were determined to have some potential to occur within the study area, although unlikely, due to the presence of very marginal habitat within three seasonal wetlands. A botanical survey of the study area was conducted and found no occurrences of any of the three species.

Animals

Of the 20 animal species identified in the CNDDB and USFWS queries (Appendix D), thirteen (13) were identified as occurring within or near the five-mile radius of the study area (Figure 5b) and are marked with an asterisk (*) in the lists below. Seventeen (17) of the species listed in Appendix D were determined to have no potential to occur within the study area due to lack of suitable habitats or microhabitats. These have been dismissed from further consideration.

Five (5) of the species have no potential to occur within the study area due to the lack of vernal pools, wetlands, marshes, streams, and similar aquatic habitats. These include:

- Steelhead, Central Valley ESU (*Oncorhynchus mykiss irideus)**
- Western pond turtle (*Actinemys marmorata)**
- California tiger salamander (*Ambystoma californiense)*
- California red-legged frog (*Rana draytonii)*
- Giant garter snake (*Thamnophis gigas)**

Seven (7) species have no potential to occur because the site lacks suitable nesting or foraging habitat (such as large/old growth trees close to a body of water, secondary cavities near open foraging areas, cliffs, banks, expansive wetlands, riparian forests/thickets, or other dense vegetation). These include:

- White-tailed kite (*Elanus leucurus)**

- Swainson's hawk (*Buteo swainsoni)**
- Tricolored blackbird (*Agelaius tricolor)**
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis)**
- Bank swallow (*Riparia riparia)*
- Song sparrow - Modesto population (*Melospiza melodia)**
- Purple martin – (*Progne subis)**

Three (3) other species have no potential to occur because the site is located outside of the species known range (the Sacramento-San Joaquin Delta or other parts of the Sacramento-San Joaquin Estuary). These include:

- Delta smelt (*Hypomesus transpacificus)*
- Longfin smelt (*Spirinichus thaleichthys)*
- Sacramento splittail (*Pogonichthys macrolepidotus)*

One species, the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)* has no potential to occur because the study area lacks any occurrence of its host plant (elderberry shrub) and one species, American badger (*Taxidea taxus*) has no potential to occur because the site lacks friable, uncultivated soil and is highly disturbed by frequent human activity.

Three (3) animal species were determined to have some potential to occur within the study area. They are listed in Table 2 below and discussed in further detail following the table. No other special-status species were determined to have any potential to occur within the study area.

Table 2.
Special-Status Animal Species Determined to Have Some Potential to Occur Within the Robla Estates Study Area

Species	Status* Federal	State	CNPS	Habitat	Potential for Occurrence Within Study Area**
Aquatic Invertebrates					
Vernal pool fairy shrimp* *Branchinecta lynchi*	FT	-	-	Vernal pools and other temporary bodies of water in southern and Central Valley of California. Most common in smaller grass or mud bottomed swales or basalt flow depression pools in unplowed grasslands.	Unlikely. Seasonal wetlands within the study area are compromised and provide very marginal habitat for the species.

Table 2. Special-Status Animal Species Determined to Have Some Potential to Occur Within the Robla Estates Study Area					
Species	**Status***			**Habitat**	**Potential for Occurrence Within Study Area****
	Federal	**State**	**CNPS**		
Vernal pool tadpole shrimp* *Lepidurus packardi*	FE	-	-	Found in vernal pools in the Central Valley of California and in the San Francisco Bay area. Inhabits vernal pools with clear to highly turbid water.	Unlikely. Seasonal wetlands within the study area are compromised and provide very marginal habitat for the species.
Birds					
Burrowing owl* *Athene cunicularia*	-	SSC	-	Dry grasslands, deserts, and scrublands.	Unlikely. Site is highly disturbed but contains a small ground squirrel population and a small number of ground squirrel burrows which are used for nesting. No burrowing owls were observed during field assessment.

*Status Codes:
Federal
FT Federal Threatened
FE Federal Endangered
State
SSC California Species of Concern

**Definitions for the Potential to Occur:
Unlikely: Minimal or marginal quality habitat in the study area.

Vernal pool fairy shrimp* (*Branchinecta lynchi*), a federally listed threatened species, and **vernal pool tadpole shrimp*** (*Lepidurus packardi*), a federally listed endangered species, are small crustaceans that occur primarily in association with vernal pools and other seasonal wetland habitats throughout the Central Valley. These species occur within a range of specific environmental conditions that include soil type, vegetation characteristics, water depth, water temperature, inundation duration, and water quality (Ericksen and Belk 1999). Emergence of adult animals is also dependent on these and other environmental factors (Eng et al 1990).

The CNDDB documents the nearest reported occurrence of vernal pool fairy shrimp as a February 1995 observation approximately 1.2 miles west of the study area near the Natomas East Main Drainage Canal at Dry Creek and the nearest reported occurrence of vernal pool tadpole shrimp as a July 1998 observation approximately 1 mile east of the study area between Magpie Creek and Ascot Avenue. Due to the high level of disturbance and marginal habitat value, the three seasonal wetlands in the study area not likely to support these species. However, the Corps of Engineers would make that determination during the Clean Water Act Section 404 permitting process and, in turn, determine if Section 7 Consultation should be initiated with the USFWS.

Burrowing owl* (*Athene cunicularia*), an SSC species, occurs in association with open, dry grasslands, deserts, agricultural areas, and rangeland throughout the Central Valley. They often occur where numerous burrowing mammals are present and frequently occupy California ground squirrel burrows (Shuford and Gardali 2008). Burrowing owls may also use man-made structures such as debris piles, culverts, and cement piles for cover. Distinctive burrow characteristics for burrowing owl are not known. However, given the size of this owl, burrow entrances are expected to be at least seven centimeters in diameter. Circumstantial evidence of burrowing owl occurrence typically consists of the presence of molted feathers, cast pellets, prey remains, or excrement near a burrow entrance. Breeding of burrowing owl occurs from March to late August and incubation lasts between 28 to 30 days. Young are fledged at about 44 days but remain near the burrow and join the adults to forage at dusk.

The CNDDB documents the nearest reported occurrence of the burrowing owl as a July 2003 observation, approximately 1.5 miles southwest of the study area near Del Paso Road on the bank of the Natomas East Main Drainage Canal. The study area contains a small number of ground squirrel burrows that provide suitable nesting habitat for the species. However, the site is regularly disked and highly disturbed by frequent human activity and noise from Rio Linda Boulevard, and it is unlikely that the burrowing owl would occur. The species was not observed during the May or June surveys.

In summary, 20 special-status animal species are known from the region surrounding the study area (Appendix D) and thirteen (13) of these species are known from within a five-mile radius (Figure 5b) of the site. Seventeen (17) of the species require habitats that do not occur within the study area, were determined to have no potential for occurring onsite, and were eliminated from further consideration. Three (3) of the special-status animal species (listed in Table 2 above) were determined to have some potential to occur within the study area, although unlikely, due to the presence of very marginal habitat. In particular, three compromised seasonal wetlands in the southern half of the study area provide marginal habitat for the vernal pool fairy shrimp and the vernal pool tadpole shrimp. Marginal nesting habitat for the burrowing owl occurs in association with a small number of ground squirrel burrows located within the ruderal grassland onsite.

RECOMMENDATIONS

Waters of the United States

The site contains areas being evaluated as potential waters of the U.S. If these areas are deemed to be waters of the U.S. and any are proposed to be filled by the proposed project, a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers would be required. In addition, a Clean Water Act Section 401 water quality certification from the Regional Water Quality Control Board would be required.

Streams, Pond, and Riparian Habitat

Impacts to the bed, bank, or channel of streams or ponds require a Lake & Streambed Alteration Agreement (LSAA) from the California Department of Fish

and Wildlife (CDFW). Other than the wetland swale connection to Robla Creek, the study area does not contain any areas that are under the jurisdiction of the CDFW and thus, an LSAA would not be required.

Tree Conservation

Native oak trees (valley oak, interior live oak, coast live oak, and blue oak), non-oak native trees (California sycamore and California buckeye), and large, healthy non-native trees are afforded various levels of protection through the City of Sacramento Tree Ordinance. The applicant should consult with the City to determine what, if any, provisions of the Tree Ordinance are applicable.

Special-Status Plants

Of four (4) special-status plant species identified through the IPaC and CNDDB database searches as occurring within the four-quadrangle region surrounding the site, one (1) was determined to have no potential to occur within the study area due to the lack of suitable habitats or soil substrates. The site contains marginal habitat for three special-status plant species: dwarf downingia, legenere, and Bogg's Lake hedge-hyssop. Marginal habitat for this species occurs in association with three seasonal wetlands located in the southern half of the site A botanical survey of the site was conducted within the species' blooming/identification period, and no occurrences of any of the three species were discovered within the study area. No further action is recommended.

Special-Status Wildlife

Of 20 special-status animal species identified through the IPaC and CNDDB database searches as occurring within the four-quadrangle region surrounding the site, only three species were determined to have any potential to occur: vernal pool fairy shrimp, vernal pool tadpole shrimp, and burrowing owl.

Aquatic Invertebrates

Three wetlands in the southern half of the study area provide very marginal habitat for the vernal pool fairy shrimp and the vernal pool tadpole shrimp. If the seasonal wetlands are deemed to be waters of the U.S. and any are proposed to be filled by the proposed project, a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers would be required. If the U.S. Army Corps of Engineers determines the seasonal wetlands to be habitat for the vernal pool fairy shrimp or the vernal pool tadpole shrimp, authorization from the USFWS is required. This happens through Section 7 (ESA) consultation between the Corps of Engineers (the Federal Lead Agency) and the USFWS.

Burrowing Owl

Marginal habitat for burrowing owl occurs throughout the study area in association with a small number of ground squirrel burrows within the open ruderal grassland. Prior to any future work activities or ground disturbance on site, a pre-construction burrowing-owl survey should be conducted to determine presence/absence of the

species within and directly adjacent to proposed work areas. Pre-construction surveys should be conducted according to the California Burrowing Owl Consortium's 1993 *Burrowing Owl Survey Protocol and Mitigation Guidelines*. In the event that active burrows are found during the pre-construction surveys, CDFW should be contacted to determine avoidance measures and mitigation responsibilities.

Nesting Raptors and Migratory Birds

The site may provide suitable nesting habitat for some common raptors known from the region, and for other birds protected by the Migratory Bird Treaty Act. Take of any active raptor nest is prohibited under California Fish and Game Code sections 3503, 3503.5, and 3513. If tree removal or other ground disturbance takes place during the breeding/nesting season (February 1 through August 31), disturbance of nesting activities could occur. To avoid impacts to nesting birds, disturbance should occur outside of the typical nesting season. If disturbance occurs at any time during the nesting season, a pre-construction survey should be conducted by a qualified biologist within two weeks prior to initiation of proposed development activities. If active nests are found during the pre-construction survey, buffer zones will be established around any identified nests, and the nests will be monitored by a qualified biologist until the offspring have fledged. Consultation with the California Department of Fish and Wildlife (CDFW) may be warranted.

REFERENCES AND OTHER RESOURCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley.

California Department of Fish and Wildlife, California Wildlife Habitat Relationships Program. 2008. Complete List of Amphibians, Reptiles, Birds, and Mammals in California. Sacramento, California.

California Department of Fish and Wildlife, Wildlife and Habitat Data Analysis Branch. 2020. Natural Diversity Data Base Report (CNDDB). Sacramento, California.

California Department of Fish and Wildlife, Nongame Wildlife Program. 2004. Threatened and Endangered Species Accounts – Birds. Found online: http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/docs/2004/t_ebirds.pdf

CaliforniaHerps.com. A Guide to the Amphibians and Reptiles of California. Updated 2014. Found online: http://www.california.herps.com

California Native Plant Society. 2020. Inventory of Rare and Endangered Plants. An online database maintained by the Native Plant Society.

Eng, L., D. Belk, and C. Eriksen. 1990. Californian Anostraca: Distribution, Habitat, and Status. Journal of Crustacean Biology 10(2):247-277.

Erikson, C.H. and D. Belk. 1999. Fairy shrimps of California's puddles, pools, and playas. Mad River Press, Inc. Eureka, CA. 196 pp.

Fix, David and Andy Bezener. 2000. Birds of Northern California. Lone Pine Publishing. Renton, Washington.

Jameson, E.W., Jr. and H.J. Peeters. 2004. Mammals of California. University of California Press. Berkeley, California.

Jennings, Mark R. and Marc P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California.

Sibley, D.A. 2003. The Sibley Field Guide to Birds of Western North America. Alfred A. Knopf. New York.

Stebbins, R.C. 1985. A Field Guide to Western Reptiles and Amphibians. Houghton Mifflin Company. Boston, Massachusetts.

U.S. Department of Agriculture, NRCS. Web Soil Survey for Sacramento County Online. http://websoilsurvey.nrcs.usda.gov. Accessed June 2020.

U.S. Fish and Wildlife Service. 1994. Final Rule: determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp. Federal Register Vol. 59, No. 180, September 19, 1994

U.S. Fish and Wildlife Service. 2020. IPaC Trust Resources Report generated for the Robla Estates study area, Sacramento County.

Western Regional Climate Center. Period of Record Monthly Climate Summary. Period of Record : 11/10/1941 to 06/09/2016. Sacramento, California. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7630

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1988. California's Wildlife, Volume I. Amphibians and Reptiles. State of California, the Resources Agency, Department of Fish and Game, Sacramento, California.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1990a. California's Wildlife, Volume II: Birds. State of California, the Resources Agency, Department of Fish and Game, Sacramento, California.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1990b. California's Wildlife, Volume III: Mammals. State of California, the Resources Agency, Department of Fish and Game, Sacramento, California.

Appendix A.
Plant Species Observed Within the Robla Estates Study Area

Appendix A

Robla Estates - Plants Observed - May/June 2020

Gymnosperms

Pinaceae - Pine Family

**Pinus sp.*	Ornamental Pine

Angiosperms - Dicots

Apiaceae (Umbelliferae) - Carrot Family

Eryngium vaseyi	Coyote thistle

Apocynaceae - Dogbane/Milkweed Family

Asclepias fascicularis	Narrow-leaf milkweed

Asteraceae (Compositae) - Sunflower Family

Achyrachaena mollis	Blow-wives
**Carduus pycnocephalus*	Italian thistle
**Centaurea solstitialis*	Yellow starthistle
Centromadia fitchii	Fitch's spikeweed
**Cichorium intybus*	Chicory
**Dittrichia graveolens*	Stinkwort
Erigeron canadensis	Canadian horseweed
Euthamia occidentalis	Western goldenrod
**Helminthotheca echioides*	Bristly ox-tongue
Holocarpha virgata subsp. virgata	Virgate tarweed
**Hypochaeris glabra*	Smooth cat's-ear
**Lactuca serriola*	Prickly lettuce
Lasthenia glaberrima	Smooth goldfields
**Leontodon saxatilis*	Long-beaked hawkbit
**Matricaria discoidea*	Pineapple-weed
Pseudognaphalium canescens	Wright's rabbit-tobacco
**Silybum marianum*	Milk thistle
**Sonchus asper subsp. asper*	Prickly sow-thistle
**Sonchus oleraceus*	Common sow-thistle
**Tragopogon dubius*	Yellow salsify
Xanthium strumarium	Cocklebur

Boraginaceae - Borage Family

Amsinckia menziesii	Rancher's fireweed
Plagiobothrys stipitatus	Stalked popcorn-flower

Brassicaceae (Cruciferae) - Mustard Family

**Brassica nigra*	Black mustard
**Hirschfeldia incana*	Short-podded mustard
Lepidium strictum	Peppergrass
**Raphanus sativus*	Wild radish
**Sinapis arvensis*	Wild mustard

Campanulaceae - Bellflower Family

Downingia bicornuta var. bicornuta	Double-horned downingia

* Indicates a non-native species

Caryophyllaceae - Pink Family

**Spergularia rubra*	Ruby sand-spurrey
**Stellaria media*	Common chickweed

Chenopodiaceae - Goosefoot Family

**Chenopodium album*	White pigweed
**Dysphania ambrosioides*	Mexican tea

Convolvulaceae - Morning-Glory Family

**Convolvulus arvensis*	Bindweed

Crassulaceae - Stonecrop Family

Crassula aquatica	Water pygmy-weed

Euphorbiaceae - Spurge Family

Croton setiger	Turkey mullein

Fabaceae (Leguminosae) - Legume Family

Acmispon americanus	Spanish lotus
**Albizia julibrissin*	Silk tree
Lupinus bicolor	Miniature lupine
**Medicago polymorpha*	California burclover
**Melilotus indicus*	Annual yellow sweetclover
**Sesbania punicea*	Red sesbania
**Trifolium dubium*	Little hop clover
**Trifolium hirtum*	Rose clover
**Vicia sativa*	Common vetch
**Vicia villosa*	Winter vetch

Fagaceae - Oak Family

Quercus agrifolia	Coast live oak
Quercus lobata	Valley oak

Geraniaceae - Geranium Family

**Erodium botrys*	Broad-leaf filaree
**Erodium cicutarium*	Red-stem filaree
**Geranium dissectum*	Cut-leaf geranium
**Geranium molle*	Dove's-foot geranium

Hypericaceae - St. John's Wort Family

**Hypericum perforatum subsp. perforatum*	Klamathweed

Lythraceae - Loosestrife Family

**Lythrum hyssopifolia*	Hyssop loosestrife

Malvaceae - Mallow Family

**Malva neglecta*	Common mallow

Martyniaceae - Unicorn-Plant Family

**Proboscidea louisianica subsp. louisianica*	Common unicorn plant

Onagraceae - Evening Primrose Family

Epilobium brachycarpum	Summer cottonweed
Epilobium densiflorum	Dense-flower spike-primrose

Papaveraceae - Poppy Family

Eschscholzia californica	California poppy

Plantaginaceae - Plantain Family

**Plantago lanceolata*	English plantain

Veronica peregrina subsp. xalapensis	Purslane speedwell

Platanaceae - Plane Tree Family

Platanus acerfolia	Common cudonia

Polygonaceae - Buckwheat Family

**Polygonum aviculare*	Common knotweed
**Rumex acetosella*	Sheep sorrel
**Rumex crispus*	Curly dock
**Rumex pulcher*	Fiddle dock

Rosaceae - Rose Family

**Prunus avium*	Sweet cherry
**Prunus persica*	Peach

Salicaceae - Willow Family

Populus fremontii	Fremont cottonwood
Salix gooddingii	Goodding's black willow

Simaroubaceae - Quassia Family

**Ailanthus altissima*	Tree of heaven

Zygophyllaceae - Caltrop Family

**Tribulus terrestris*	Puncture vine

Angiosperms -Monocots

Alismataceae - Water-Plantain Family

Alisma triviale	California water plantain

Cyperaceae - Sedge Family

Carex barbarae	Whiteroot sedge
Cyperus eragrostis	Tall flatsedge
Eleocharis macrostachya	Creeping spikerush
Schoenoplectus acutus	Hardstem bulrush

Juncaceae - Rush Family

Juncus balticus	Baltic rush
**Juncus effusus*	Soft rush
Juncus xiphioides	Iris-leaved rush

Poaceae (Gramineae) - Grass Family

**Aira caryophyllea*	Silver European hairgrass
**Avena fatua*	Wild oat
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Bromus madritensis*	Foxtail brome
**Cynodon dactylon*	Bermudagrass
**Elymus caput-medusae*	Medusahead
Elymus glaucus	Blue wildrye
Elymus triticoides	Beardless wildrye
**Festuca myuros*	Rattail sixweeks grass
**Festuca perennis*	Italian ryegrass
**Hordeum marinum subsp. gussoneanum*	Mediterranean barley
**Hordeum murinum*	Wall barley
**Leersia oryzoides*	Rice cutgrass
Phalaris lemmonii	Lemmon's canary grass

**Phalaris paradoxa*	Paradox canary-grass
**Poa annua*	Annual bluegrass
**Polypogon monspeliensis*	Annual beard grass
**Sorghum halepense*	Johnsongrass

Themidaceae - Brodiaea Family

Brodiaea elegans subsp. elegans	Elegant harvest brodiaea
Dichelostemma capitatum	Blue dicks
Triteleia hyacinthina	White triteleia

Appendix B.
Wildlife Species Observed Within the Robla Estates Study Area

Appendix B

Robla Estates - Animals Observed - May/June 2020

Reptiles	
Western fence lizard	*Sceloporus occidentalis*

Birds	
Turkey vulture	*Cathartes aura*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
Ring-necked pheasant	*Phasianus colchicus*
Mourning dove	*Zenaida macroura*
Black phoebe	*Sayornis nigricans*
Western kingbird	*Tyrannus verticalis*
Western scrub-jay	*Aphelocoma californica*
Yellow-billed magpie	*Pica nuttalli*
American crow	*Corvus brachyrhynchos*
Cliff swallow	*Petrochelidon pyrrhonota*
Northern mockingbird	*Mimus polyglottos*
Red-winged blackbird	*Agelaius phoeniceus*
Brewer's blackbird	*Euphagus cyanocephalus*
House finch	*Haemorhous mexicanus*

Mammals	
Black-tailed jackrabbit	*Lepus californicus*
California ground squirrel	*Spermophilus beecheyi*

Appendix C.
Potentially-Occurring Special-Status Plants in the Region of the Robla Estates Study Area

Appendix C

Robla Estates Potentially-Occurring Special-Status Plants

Family Taxon Common Name	Status*	Flowering Period	Habitat	Probability on Project Site
Alismataceae				
Sagittaria sanfordii Sanford's arrowhead	Fed: - State: - CNPS: Rank 1B.2	May-October	Marshes and swamps (assorted shallow freshwater).	None. No suitable habitat (marshes, swamps, or slow moving streams) occurs within the study area. No occurrences of the species were observed during the botanical survey.
Campanulaceae				
Downingia pusilla Dwarf downingia	Fed: - State: - CNPS: Rank 2B.2	March-May	Vernal pools and seasonal wetlands.	Unlikely. Marginal habitat present in seasonal wetlands within the study area. No occurrences of the species were observed during the botanical survey.
Legenere limosa Legenere	Fed: - State: - CNPS: Rank 1B.1	April-June	Vernal pools and seasonal wetlands.	Unlikely. Marginal habitat present in seasonal wetlands within the study area. No occurrences of the species were observed during the botanical survey.
Plantaginaceae				
Gratiola heterosepala Bogg's Lake hedge-hyssop	Fed: - State: CE CNPS: Rank 1B.2	April-August	Vernal pools.	Unlikely. Marginal habitat present in seasonal wetlands within the study area. No occurrences of the species were observed during the botanical survey.

Appendix C

Robla Estates Potentially-Occurring Special-Status Plants

Family Taxon Common Name	Status*	Flowering Period	Habitat	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate
FSS - Forest Service Sensitive
FSW - Forest Service Watchlist

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CSC - California Species of Special Concern

CNPS (California Native Plant Society - List.RED Code):
Rank 1A - Extinct
Rank 1B - Plants rare, threatened, or endangered in California and elsewhere
Rank 2A- Plants extinct in California, but more common elsewhere
Rank 2B - Plants rare, threatened, or endangered in California, more common elsewhere
Rank 3 - Plants about which more information is needed, a review list
Rank 4 - Plants of limited distribution, a watch list
RED Code
1 - Seriously endangered (>80% of occurrences threatened)
2 - Fairly endangered (20 to 80% of occurrences threatened)
3 - Not very endangered (<20% of occurrences threatened)

Appendix D.
Potentially-Occurring Special-Status Animals in the Region of the Robla Estates Study Area

Appendix D

Robla Estates Potentially-Occurring Special-Status Animals

	Status*	Habitat	Probability on Project Site
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	Fed: FT State: - Other: -	Vernal pools and other temporary bodies of water in southern and Central Valley of California. Most common in smaller grass or mud bottomed swales or basalt flow depression pools in unplowed grasslands.	Unlikely. Seasonal wetlands within the study area are compromised and provide very marginal habitat for the species.
Vernal pool tadpole shrimp *Lepidurus packardi*	Fed: FE State: - Other: -	Found in vernal pools in the Central Valley of California and in the San Francisco Bay area. Inhabits vernal pools with clear to highly turbid water.	Unlikely. Seasonal wetlands within the study area are compromised and provide very marginal habitat for the species.
Insects			
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	Fed: FT State: - Other: *	Requires host plant, elderberry (Sambucus nigra) for its life cycle. Shrubs must have live stem diameters at ground level of 1.0 inch or greater. Occurs in Great Valley and lower foothills.	None. Site lacks any occurrence of the species' host plant (elderberry shrub).
Fish			
Steelhead, Central Valley ESU *Oncorhynchus mykiss irideus*	Fed: FT State: - Other: -	Occurs below man-made impassable barriers in the Sacramento and San Joaquin rivers and tributaries. Adults migrate from ocean to natal freshwater streams to spawn. Yuba River has essentially the only remaining wild steelhead fishery in Central Valley.	None. No suitable habitat (freshwater stream above man-made barriers) occurs within the study area.
Delta smelt *Hypomesus transpacificus*	Fed: FT State: CT Other: -	Endemic to the Sacramento-San Joaquin Delta in coastal and brackish waters. Occurs seasonally in Suisun and San Pablo bays. Spawning usually occurs in dead-end sloughs and shallow channels.	None. Site occurs outside of the species known range.
Longfin smelt *Spirinichus thaleichthys*	Fed: FC State: CSC Other:	Endemic to the lower reaches of the Sacramento-San Joaquin River system. Inhabits open waters in the Delta and Suisun Bay. After spawning, larvae are carried downstream to brackish nursery areas.	None. Site occurs outside of the species known range.
Sacramento splittail *Pogonichthys macrolepidotus*	Fed: - State: CSC Other:	Found in: (1) the Delta, (2) Suisun Bay, (3) Suisun Marsh, (4) Napa River, (5) Petaluma River, and (6) other parts of the Sacramento-San Joaquin Estuary. Requires flooded vegetation for spawning and rearing.	None. Site occurs outside of the species known range.

Appendix D

Robla Estates Potentially-Occurring Special-Status Animals

	Status*	Habitat	Probability on Project Site
Amphibians			
California tiger salamander *Ambystoma californiense*	Fed: FT State: CT Other: -	Occurs in annual grassland habitat (<1500 feet) and occasionally in grassy understory of valley-foothill hardwood habitats where lowland aquatic sites are available for breeding. Breeds primarily in vernal pools.	None. Site is highly disturbed and lacks suitable wetland habitat. Species is very uncommon in region.
California red-legged frog *Rana draytonii*	Fed: FT State: SSC Other: -	Occurs in lowlands and foothills in deeper pools and slow-moving streams, usually with emergent wetland vegetation. Requires 11-20 weeks of permanent water for larval development.	None. Site is highly disturbed and lacks suitable habitat (ponds, deeper pools, or slow-moving streams with necessary duration of water).
Reptiles			
Western pond turtle *Actinemys marmorata*	Fed: - State: SSC Other: -	Inhabits ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Needs suitable basking sites and upland habitat for egg laying.	None. No suitable wetland habitat with necessary duration of water occurs within the study area.
Giant garter snake *Thamnophis gigas*	Fed: FT State: CT Other: -	Primarily associated with marshes and sloughs, less with slow-moving creeks, and absent from larger rivers. Nocturnal retreats include mammal burrows and crevices. During the day, basks on emergent vegetation such as cattails and tules.	None. No suitable habitat (marshes, sloughs, slow-moving creeks) present within the study area.
Birds			
White-tailed kite *Elanus leucurus*	Fed: - State: CFP Other: -	Found in lower foothills and valley margins with scattered oaks and along river bottomlands or marshes adjacent to oak woodlands. Nests in trees with dense tops.	None. Site is highly disturbed, occurs in close proximity to regular human activity, and lacks suitable nesting trees.
Swainson's hawk *Buteo swainsoni*	Fed: - State: CT Other: *	Breeds in open areas with scattered trees; prefers riparian and sparse oak woodland habitats. Requires nearby grasslands, grain fields, or alfalfa for foraging. Rare breeding species in Central Valley.	None. Site lacks preferred nesting habitat (large trees within a riparian corridor). May nest along nearby Robla Creek. Species is likely to forage on site and was observed flying overhead.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Fed: FT State: CE Other: -	Inhabits riparian forests along the broad, lower floodplains of larger rivers. Nests in thickets of willows and cottonwoods with an understory of blackberry, nettle, or wild grape.	None. No suitable habitat (riparian areas along floodplaisn or large rivers) occurs within the study area.

Appendix D

Robla Estates Potentially-Occurring Special-Status Animals

	Status*	Habitat	Probability on Project Site
Burrowing owl *Athene cunicularia*	Fed: - State: SSC Other: *	Found in annual grasslands. Nests in burrows dug by small mammals, primarily ground squirrels.	Unlikely. Site is highly disturbed but contains a small ground squirrel population and a small number of ground squirrel burrows which are used for nesting. No burrowing owls were observed during field assessment.
Purple martin *Progne subis*	Fed: - State: SSC Other: *	Breeds in riparian woodland, oak woodland, open coniferous forests. Secondary cavity nester. Requires nest sites close to open foraging areas of water or land.	None. No suitable nesting habitat (secondary cavities in birdhouse, dead trees, cliffs, or buildings near open foraging areas) occurs within the study area.
Bank swallow *Riparia riparia*	Fed: - State: CT Other: *	Colonial nester near riparian and oher lowland habitats. Requires vertical banks or cliffs with fine-textured, sandy soils near streams, rivers, and lakes.	None. No suitable nesting habitat (vertical banks or cliffs near a stream, river or lake) occurs within the study area.
Song Sparrow - Modesto population *Melospiza melodia*	Fed: State: SSC Other: -	Occurs in expansive freshwater wetlands and early stage riparian thickets of Sacramento Valley. Prefers emergent freshwater marshes dominated by tules, cattails, and willow thickets.	None. No suitable nesting habitat (expansive freshwater wetlands and early stage riparian thickets) occurs within the study area.
Tricolored blackbird *Agelaius tricolor*	Fed: - State: CT Other: CSC	Colonial nester in dense cattails, tules, brambles or other dense vegetation. Requires open water, dense vegetation, and open grassy areas for foraging.	None. No suitable nesting habitat (dense cattails, tules, brambles or other dense vegatation) occurs within the study area.
Mammals			
American badger *Taxidea taxus*	Fed: - State: CSC Other: -	Occurs in dry, open soils in herbaceous, shrub, and forest habitats. Needs friable, uncultivated soil. Preys on rodents.	None. Site is highly disturbed and lacks suitable habitat (friable, unculvitated soils).

Appendix D

Robla Estates Potentially-Occurring Special-Status Animals

Status*	Habitat	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate
FPD - Federal Proposed for Delisting

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CFP - California Fully Protected
CSC - California Species of Special Concern

Other:
Some species have protection under the other designations, such as the California Department of Forestry Sensitive Species, Bureau of Land Management Sensitive Species, U.S.D.A. Forest Service Sensitive Species, and the Migratory Bird Treaty Act. Raptors and their nests are protected by provisions of the California Fish and Game Code. Certain areas, such as wintering areas of the monarch butterfly, may be protected by policies of the California Department of Fish and Game.
WL - CDFG Watch List

APPENDIX D
WETLAND DELINEATION

WETLAND DELINEATION
FOR THE

±25.8-ACRE ROBLA ESTATES STUDY AREA

CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA

Prepared for:

Ralph Swift
Swift Construction and Development
P.O. Box 3038
Granite Bay, CA 95746

Prepared by:

Salix consulting, inc.
11601 Blocker Drive, Ste. 100
Auburn, California 95603
(530) 888-0130

JUNE 2020

TABLE OF CONTENTS

INTRODUCTION **1**
Location and Setting 1

CONTACT INFORMATION **1**

METHODOLOGY **4**

FINDINGS **4**
Soils 4
Climate 6
Hydrology 6
Vegetation 7
Ruderal Grassland 7
Mixed Woodland 7
Waters of the United States 7
Seasonal Wetland 12
Wetland Swale 12
Ditches 13

REFERENCES AND OTHER SOURCES **14**

FIGURES

Figure 1. Site & Vicinity Map 2
Figure 2. Aerial Photo 3
Figure 3. Soils Map 5
Figures 4a-d. Site Photos 8-10
Figure 5. Wetland Delineation Map 11

TABLE

Table 1. Waters of the United States 12

APPENDICES

Appendix A. Wetland Data Sheets
Appendix B. Plant Species Observed on the Project Study Area
Appendix C. USACOE Aquatic Resources Sreadsheet

WETLAND DELINEATION
FOR THE
±25.8-ACRE ROBLA ESTATES STUDY AREA

INTRODUCTION

Location and Setting

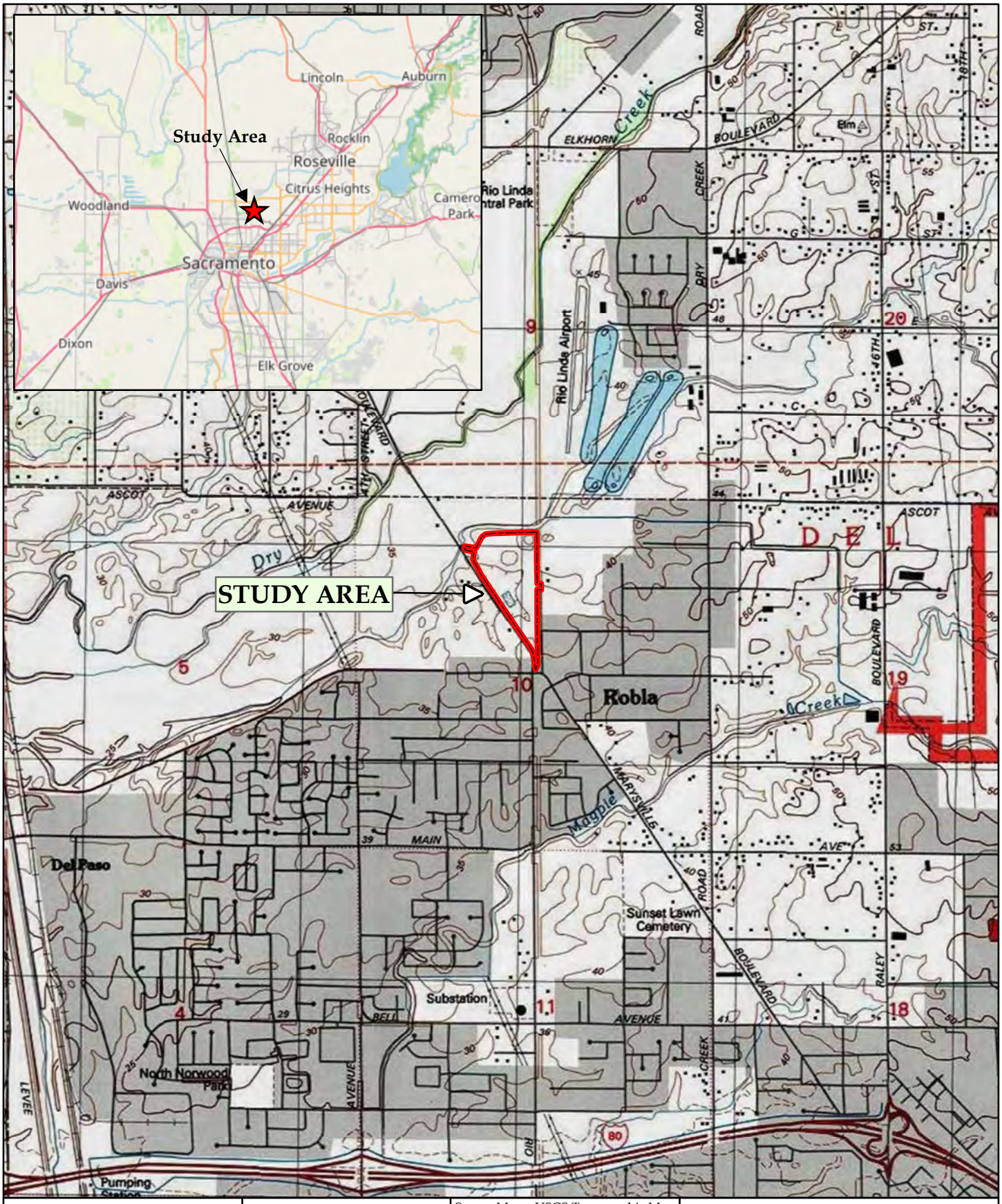
Salix Consulting, Inc. (Salix) has prepared a wetland delineation for the ±25.8-acre Robla Estates study area located in the vicinity of Northpointe, in the City of Sacramento, Sacramento County, California. The approximate coordinates for the center of the property are latitude 38.66621° and longitude -121.4488°. It is situated within the Del Paso Land Grant (not part of the Township and Range system, which was a survey of federal lands). The parcel is located on the Rio Linda, California 7.5-minute USGS topographic quadrangle (Figure 1).

The site occurs in the eastern Sacramento Valley, south of the unincorporated community of Rio Linda and directly south of the northern edge of the City of Sacramento city limits. The study area is bounded on the west by Rio Linda Boulevard, on the east by a bike trail, and on the north by a gravel access road. The site is mostly flat, with elevations ranging from approximately 45 feet near the northeast corner to 33 feet near an outfall in the northwest corner. Robla Elementary School is located near the southern corner of the study area and suburban residential neighborhoods are located to the south and east of the site. Land to the north and west of the site is mostly undeveloped (Figure 2).

CONTACT INFORMATION

Applicant:
Swift Construction and Development
P.O. Box 3038
Granite Bay, CA 95746
Phone: (916) 747-5255
Contact: Ralph Swift

Delineated by:
Salix Consulting, Inc.
11601 Blocker Drive, Suite 100
Auburn, California 95603
Phone: (530) 888-0130
Contact: Jeff Glazner



Salix consulting, inc.

N

0 1,000 2,000

Feet

Source Maps: USGS Topographic Map
Rio Linda Quad 1:24,000
Rancho Del Paso Land Grant

Figure 1

SITE AND VICINITY MAP

Robla Estates

City of Sacramento, Sacramento County, CA

Salix consulting, inc.

N

0 125 250

Feet

Study Area (±25.8 acres)

Project Boundary (±21.1 acres)

Imagery provided by:
Baker-Williams Engineering Group, May 2020
Overlaid on Sac Regional GIS Coop, March 2018

Figure 2

AERIAL MAP

Robla Estates

City of Sacramento, Sacramento County, CA

METHODOLOGY

Waters of the United States were delineated on May 3 and June 3, 2020 by Jeff Glazner. The delineation was conducted according to the 1987 Corps Manual (Environmental Laboratory 1987) as amended by the Arid West Regional Supplement (U.S. Army Corps of Engineers 2008). Potential waters of the U.S. were evaluated and mapped using a Trimble GeoXT 6000 GPS (submeter). Three-parameter data sheets (Appendix A) were filled out at four (4) locations as indicated on the Wetland Delineation Map. Representative ground photographs were taken to represent notable features of the site.

Information on soils of the study area was obtained from the U.S. Department of Agriculture – National Resource Conservation Service's online Web Soil Survey (NRCS 2020). In the field, a Munsell Color chart was used to determine moist soil colors. Appendix B is a list of plants observed during the delineation, along with the scientific name and wetland status of each species. Where a plant species observed has a wetland indicator status (not UPL), plant nomenclature follows Lichvar et.al. (2016). Otherwise, species names are aligned with the *The Jepson Manual* (Baldwin et.al. 2012).

Field data collected with the GPS were differentially corrected and were used to create a Wetland Delineation Map using Arc GIS software. The Corps of Engineers Aquatic Resources spreadsheet is included in Appendix C.

FINDINGS

Soils

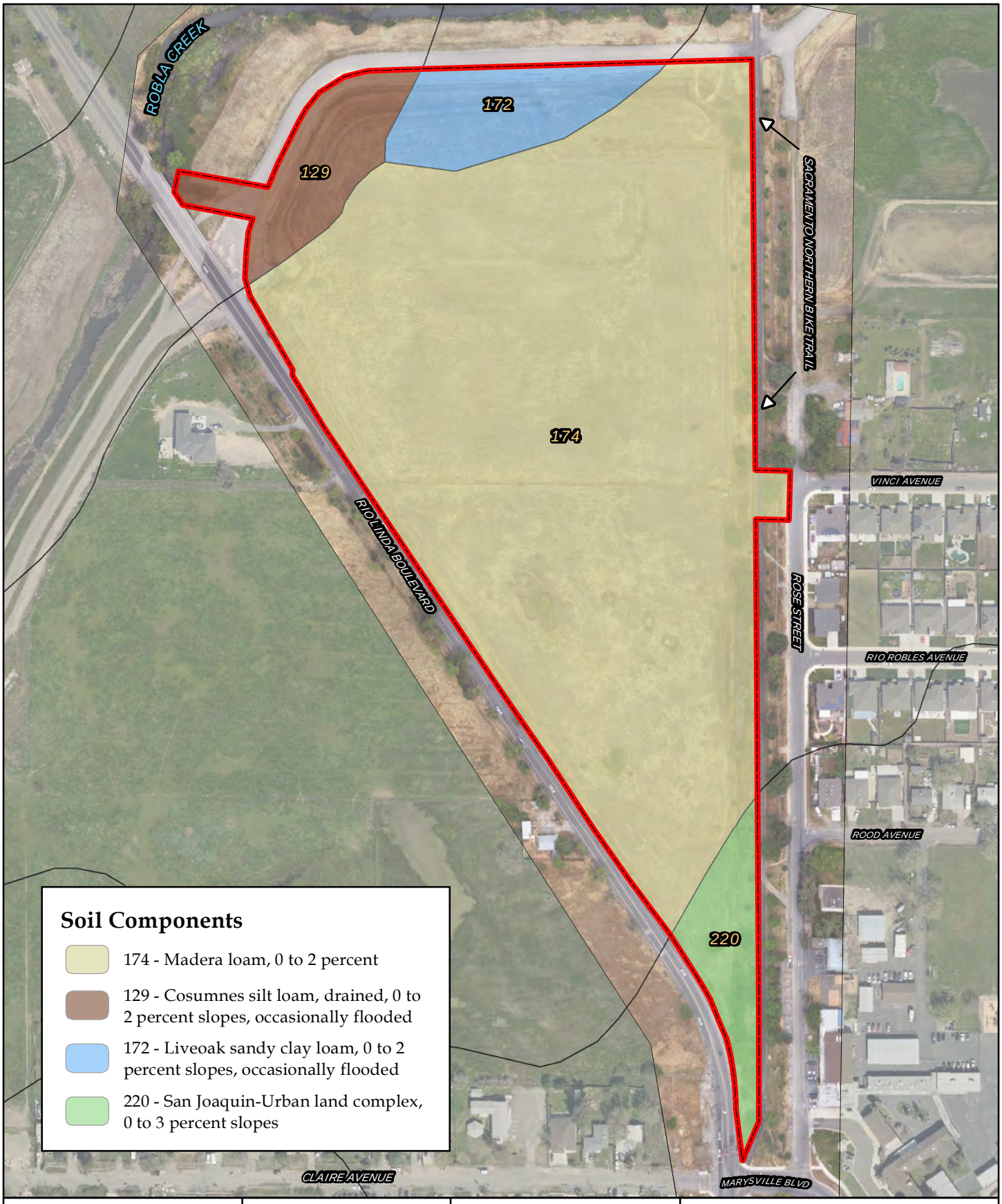
Four soil units have been mapped on the property (Figure 3): Andregg coarse sandy loam, 2 to 9 percent slopes, Andregg-Rock outcrop complex, 5 to 30 percent slopes, Xerorthents, cut and fill areas and Xerorthents, placer areas (NCRS 2020). The components of each complex are described below.

Cosumnes silt loam, drained, 0 to 2 percent slopes, occasionally flooded

The Cosumnes component, which makes up 85 percent of the map unit, is found in valleys and narrow low flood plains. Its parent material consists of alluvium and its natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. This soil is occasionally flooded, is not ponded, and meets hydric criteria. There is no zone of water saturation within a depth of 72 inches and there are no saline horizons within 30 inches of the soil surface.

Liveoak sandy clay loam, 0 to 2 percent slopes, occasionally flooded

The Liveoak component, which makes up 85 percent of the map unit, is found on narrow high flood plains and valleys. Its parent material consists of alluvium derived from granite, and its natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. This soil is occasionally flooded, is not ponded, and does



Salix consulting, inc.

N

0 125 250

Feet

Study Area (±25.8 acres)

Imagery provided by:
Baker-Williams Engineering Group, May 2020
Overlaid on Sac Regional GIS Coop, March 2018

Figure 3

SOIL COMPONENTS

Robla Estates

City of Sacramento, Sacramento County, CA

not meet hydric criteria. There is no zone of water saturation within a depth of 72 inches.

Madera loam, 0 to 2 percent slopes

The Madera component, which makes up 85 percent of the map unit, is found in valleys and low areas on low terraces. Its parent material consists of alluvium derived from granite and its natural drainage class is moderately well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. This soil is not flooded, is not ponded, and does not meet hydric criteria. There is no zone of water saturation within a depth of 72 inches. There are no saline horizons within 30 inches of the soil surface.

San Joaquin-Urban land complex, 0 to 3 percent slopes

The San Joaquin component, which makes up 65 percent of the map unit, is found in valleys and low terraces. Its parent material consists of alluvium derived from granite, and its natural drainage class is moderately well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. This soil is not flooded, is not ponded, and does not meet hydric criteria. There is no zone of water saturation within a depth of 72 inches.

The urban land component, which makes up 25 percent of the map unit, is a miscellaneous area.

Climate

The study area has a Mediterranean climate with cool, wet winters and hot, dry summers. The average high temperature is 74°, with the hottest months being July and August, averaging 93° and 92°, respectively. The low temperatures for these months averages 58° each month. The coolest months are December and January, averaging a high temperature of 54° and a low temperature of 38° each month. Annual precipitation averages 17.2 inches, nearly all of which occurs as rainfall between October and April. The wettest months are December, January, and February, each averaging more than 3 inches of rainfall.

Hydrology

The site occurs in the Lower Steelhead Creek HUC12 (180201110303) part of the greater Lower American HUC8 watershed (18020111). Surface water in the southern half of the site trends toward one of three features. A seasonal wetland located near the western boundary collects on-site surface water, while two seasonal wetlands located along the eastern boundary receive surface water runoff from a drainage east of the bike path. The three seasonal wetlands have no drainage outlet, and water within the wetlands evaporates or percolates into the ground.

Surface water in the northern portion of the study area trends toward a ditch along the base of a levee that follows the northern boundary of the study site. Water in the ditch passes through an outfall underneath the levee near the northwest corner of the study

area before exiting the site and draining into Robla Creek. Robla Creek continues southwest for approximately 2 miles before draining into Steelhead Creek. Water in Steelhead Creek flows in a southwesterly direction for approximately 8 miles before draining into the Lower American and Sacramento Rivers near Discovery Park in Sacramento, CA.

Vegetation

Two biological community are mapped within the study area – ruderal grassland and mixed woodland.

Ruderal Grassland

The majority of the study area, approximately 24.5 acres, is disturbed annual grassland (ruderal). This habitat type consists mostly of weedy annual grasses and forbs, and is regularly disked. Woody vegetation is minimal, represented by scattered trees and saplings, mostly in the southern portion of the site where tree of heaven (*Ailanthus altissima*) is scattered. Common species throughout the ruderal grassland include wild oat (*Avena fatua*), Italian ryegrass (*Festuca perennis*), ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), yellow starthistle (*Centaurea solstitialis*), rose clover (*Trifolium hirtum*), red-stemmed filaree (*Erodium botrys*), English plantain (*Plantago lanceolata*), Italian thistle (*Carduus pycnocephalus*), turkey mullein (*Croton setiger*), pricky lettuce (*Lactuca serriola*), and ruby sand-spurrey (*Spergularia rubra*).

Mixed Woodland

Approximately 1.3 acres of the study area, located primarily along the eastern boundary following the bike trail, is mixed woodland. The mixed woodland is composed of native trees including valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*) and Goodding's black willow (*Salix gooddingii*) interspersed with planted trees and non-native species including silk tree (*Albizia julibrissin*), peach (*Prunus persica*), tree of heaven and ornamental pine (*Pinus sp.*). The herbaceous layer, which is regularly mowed, contains many of the same species as the ruderal grassland described above.

Waters of the United States

Two categories of potential waters of the United States have been mapped on the study area and including seasonal wetland and wetland swale. Table 1 provides an acreage summary of waters of the United States on the site, and waters are described in further detail beneath the table. Figures 4a through 4c show representative site photographs; Figure 5 is the wetland delineation map.

Looking west over outfall into Robla Creek toward Rio Linda Boulevard. Swale WS-1 choked with red sesbania. *Photo Date: 6-03-20.*

Looking southeast along western side of study area over culvert that drains into Robla Creek. *Photo Date: 5-03-20.*

Salix consulting, inc.

Figure 4a

SITE PHOTOS

Robla Estates

City of Sacramento, Sacramento County, CA

Looking southeast over SW-1. One large Goodding's willow occupies the center of the wetland. *Photo Date: 5-03-20.*

Looking northwest over northern portion of SW-1. *Photo Date: 5-03-20.*

Salix consulting, inc.

Figure 4b

SITE PHOTOS

Robla Estates

City of Sacramento, Sacramento County, CA

Looking south over SW-2 along eastern project area fence line.
Photo Date: 5-03-20.

Looking south from within SW-3 at outfall culvert that provides much of the water to this wetland. *Photo Date: 5-03-20.*

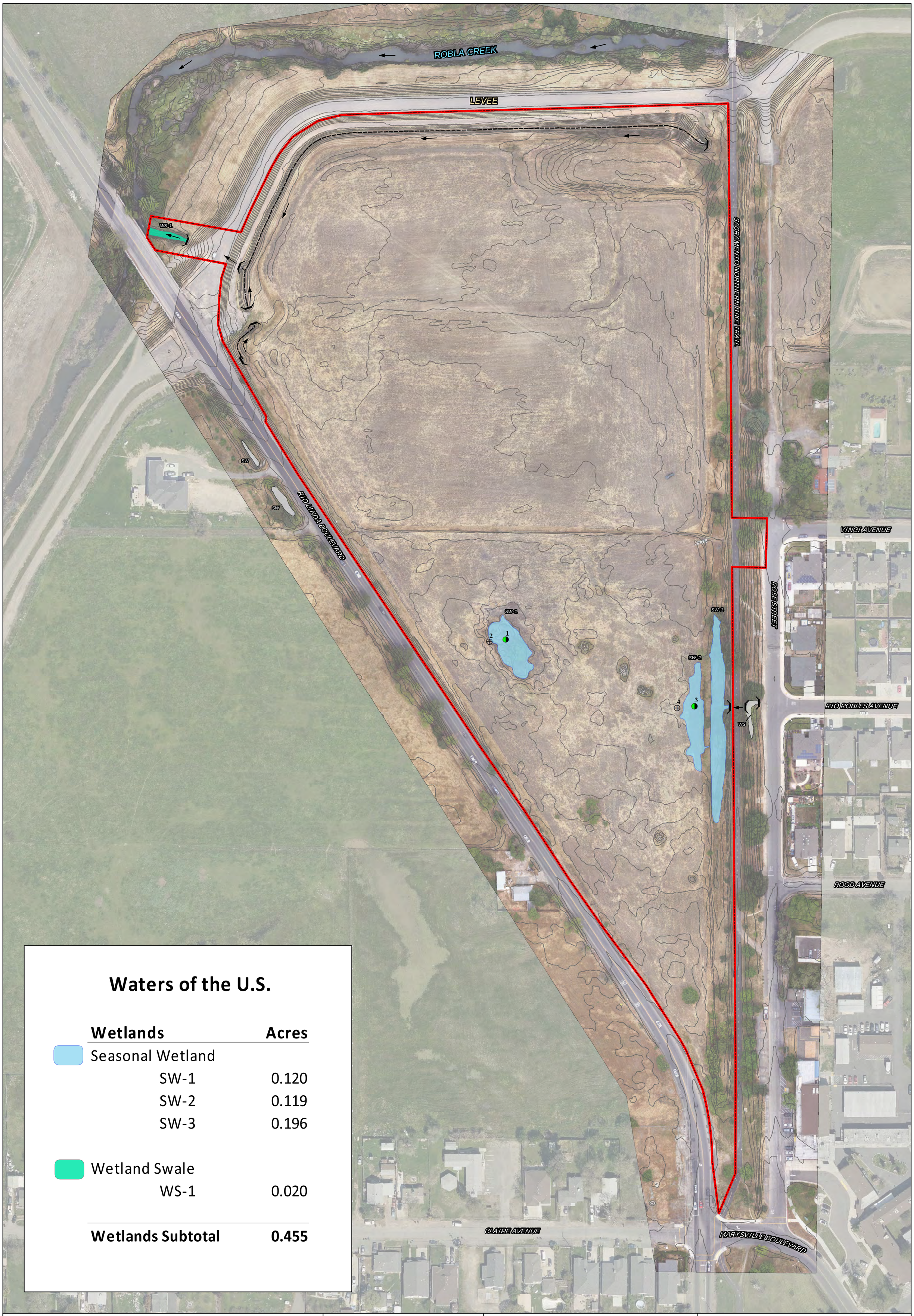
Salix consulting, inc.

Figure 4c

SITE PHOTOS

Robla Estates

City of Sacramento, Sacramento County, CA



Waters of the U.S.

Wetlands	Acres
Seasonal Wetland	
SW-1	0.120
SW-2	0.119
SW-3	0.196
Wetland Swale	
WS-1	0.020
Wetlands Subtotal	**0.455**

PREPARED BY:

Salix consulting, inc.

PREPARED FOR:

Ralph Swift
Swift Construction and Development
P.O. Box 3038
Granite Bay, CA 95746

FIELDWORK: J. Glazner May-June 2020
DRAWN BY: J. Soch
COORDINATE SYSTEM: NAD83 CA State Plane II (0402) (US FT)
BASEMAP: Baker-Williams Engineering Group, May 2020
Overlaid on Sac Regional GIS Coop, March 2018

N

0 50 100
Feet

Study Area (±25.8 acres)
Upland Data Point
Wetland Data Point
Drainage Ditch
Offsite Wetlands

Figure 5

WETLAND DELINEATION MAP

Robla Estates

City of Sacramento, Sacramento County, CA

June 16, 2020

Table 1.
Waters of the United States

Type	Acreage
Wetland Type:	
Seasonal Wetland	
SW-1	0.120
SW-2	0.119
SW-3	0.196
Wetland Swale	
WS-1	0.020
Total	**0.455**

Seasonal Wetland

Three seasonal wetlands are mapped in the study area totaling 0.435 acre. Seasonal Wetland 1 (SW-1), which appears to be an excavated feature, is located in the western area of the site. It is approximately three feet deep and has exposed hardpan in the bottom. There is no outlet but the feature does not appear to fill to maximum. It supports a variable flora of mostly annual species, the most abundant being annual beard grass (*Polypogon monspeliensis*). Stalked popcorn-flower (*Plagiobothrys stipitatus*) is abundant in the basin as is prickly lettuce (*Lactuca serriola*), Italian ryegrass, curly dock (*Rumex crispus*) and creeping spikerush (*Eleocharis macrostachya*). One large Goodding's black willow also grows in the basin of Seasonal Wetland 1 (Figure 4b).

Seasonal Wetland 2 (SW-2) is located along the eastern study area boundary and is generally a low area of the field near the outfall of a storm drain originating in the subdivision just east of the study area. The wetland supports a mix of seasonal wetland and vernal pool species including spikerush, purslane speedwell (*Veronica peregrina* subsp. *xalapensis*), double-horned downingia (*Downingia bicornuta* var. *bicornuta*), common knotweed (*Polygonum aviculare*), and hyssop loosestrife (*Lythrum hyssopifolia*). The wetland is quite compromised by frequent disking and the subtle edge of the wetland is covered by dense Italian ryegrass (Figure 4c).

Seasonal Wetland 3 (SW-3) is adjacent to SW-2 but it is situated between the fence line and the bike trail within the mixed woodland strip. It is not as frequently disturbed and has a more well-defined edge. It contains more organic matter and is sparsely vegetated by Italian ryegrass, curly dock, and other wetland generalists (Figure 4c).

Wetland Swale

A wetland swale is mapped between the levee near Robla Creek to Robla Creek. This constructed swale originates at an outfall situated beneath the levee, which drains ditches located on the south side of the levee. The swale supports a dense population of red sesbania (*Sesbania punicea*). The herbaceous layer in the upper portion of the swale near the levee is mostly Bermudagrass (*Cynodon dactylon*), while the lower portion of the swale (near the confluence with Robla Creek) receives backwater from the creek and supports a mix of marsh species (Figure 4a).

Ditches

Ditches run along the toe of the levee that follows the northern boundary of the study area and along a small portion of the toe of slope running parallel to the boundary in the northwestern area of the site. These ditches are connected to culverts that drain water from surrounding areas and to the culvert that drains to Robla Creek under the levee (at the northwest corner of the study area). They carry minimal water and have not been mapped as potential waters of the U.S.

REFERENCES AND OTHER SOURCES

Baldwin, Bruce G. (ed.). 2012. The Jepson Manual - Vascular Plants of California, Second Edition. University of California Press. Berkeley, CA.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 Wetland Ratings*. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.

Munsell Color. 2015. Munsell Soil Color Charts. Munsell Color, X-Rite. Grand Rapids, MI.

U.S. Army Corps of Engineers. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ed. J.S. Wakeley, R.W Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, NRCS. Web Soil Survey for Sacramento County Online. http://websoilsurvey.nrcs.usda.gov. Accessed June 2020.

Western Regional Climate Center. Period of Record Monthly Climate Summary. Period of Record : 11/10/1941 to 06/09/2016. Sacramento, California. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7630

Appendix A.
Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Robla Estates City/County: City of Sacramento Sampling Date: 6-03-20

Applicant/Owner: Ralph Swift State: CA Sampling Point: 01

Investigator(s): Jeff Glazner Section, Township, Range: Rancho Del Paso Land Grant

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR C Lat: 38.66513929 Long: -121.44896951 Datum: NAD83

Soil Map Unit Name: 174 - Madera loam, 0 to 2 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Excavated depression with exposed hardpan. Soil only 2'' deep at data point location.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Polypogon monspeliensis	35	x	FACW
2. Plagiobothrys stipitatus	20	x	FACW
3. Lactuca serriola	3		FACU
4. Polygonum aviculare	2		FAC
5. Festuca perennis	5		FAC
6. Epilobium brachycarpum	5		UPL
7. Lythrum hyssopifolia	10		OBL
8. Epilobium densiflorum	2		FACW
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✓ No _____**

Remarks:

Weedy flora in this excavated basin. One large Salix gooddingii in basin.

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	90	7.5 YR 4/6	10	C	M	Loam	
2+	Hardpan							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Bottom of basin has exposed hardpan. Soil depth in much of basin very shallow.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
✓ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? **Yes** ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Basin with evidence of seasonal ponding. Exposed hardpan. Basin 3+ feet deep with no outlet.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Robla Estates City/County: City of Sacramento Sampling Date: 6-02-20

Applicant/Owner: Ralph Swift State: CA Sampling Point: 02

Investigator(s): Jeff Glazner Section, Township, Range: Rancho Del Paso Land Grant

Landform (hillslope, terrace, etc.): HIllslope Local relief (concave, convex, none): None Slope (%): 5

Subregion (LRR): LRR C Lat: 38.66512771 Long: -121.44907792 Datum: NAD83

Soil Map Unit Name: 174 - Madera loam, 0 to 2 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland comparison to data point 01 -- on side slope of basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Festuca perennis	50	x	FAC
2. Sinapis arvensis	10		UPL
3. Bromus diandrus	10		UPL
4. Phalaris paradoxa	15		FAC
5. Rumex crispus	10		FAC
6. Carduus pycnocephalus	5		UPL
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✓ **No** _____

Remarks:

Grassy slope.

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
2-12	7.5 YR 4/3	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Side slope above ponding.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Robla Estates City/County: City of Sacramento Sampling Date: 6-02-20

Applicant/Owner: Ralph Swift State: CA Sampling Point: 03

Investigator(s): Jeff Glazner Section, Township, Range: Rancho Del Paso Land Grant

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): LRR C Lat: 38.66479143 Long: -121.44773551 Datum: NAD83

Soil Map Unit Name: 174 - Madera loam, 0 to 2 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Seasonal wetland in low area of field near large culvert outfall draining from subdivision to east. Low area of field but not well-defined basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Eleocharis macrostachya	10	x	OBL
2. Downingia bicornuta var. bicornuta	10	x	OBL
3. Veronica peregrina subsp. xalapensis	10	x	OBL
4. Lythrum hyssopifolia	10	x	OBL
5. Lasthenia glaberrima	5		OBL
6. Rumex crispus	5		FAC
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✓ No _____**

Remarks:

Vernal pool/seasonal wetland flora. Site is seasonally disked.

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 5/2	90	7.5 YR 4/6	10	C	M	Clayey lo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Very clayey soil. Prominent redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil moist at 6''. Evidence of prolonged saturation. Location receives supplemental seasonal water from subdivision to east.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Robla Estates City/County: City of Sacramento Sampling Date: 6-02-20

Applicant/Owner: Ralph Swift State: CA Sampling Point: 04

Investigator(s): Jeff Glazner Section, Township, Range: Rancho Del Paso Land Grant

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-1

Subregion (LRR): LRR C Lat: 38.66478244 Long: -121.4478499 Datum: NAD83

Soil Map Unit Name: 174 - Madera loam, 0 to 2 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland comparison to data point 03. Near edge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Festuca perennis	60	x	FAC
2. Bromus diandrus	5		UPL
3. Rumex crispus	5		FAC
4. Convolvulus arvensis	10		UPL
5. Malva neglecta	10		UPL
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✓ **No** _____

Remarks:

Weedy grassland flora.

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 3/2	95	5YR 4/6	5	C	M	Clayey lo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Disked soil. Redox evident.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Upper edge of seasonal ponding area.

Appendix B.
Plant Species Observed

Appendix B - Robla Estates Plants Observed w-Wetland Status - May/June 2020

Taxon	Common Name	Wetland Status
Achyrachaena mollis	Blow-wives	FAC
Acmispon americanus	Spanish lotus	UPL
Ailanthus altissima	Tree of heaven	FACU
Aira caryophyllea	Silver European hairgrass	FACU
Albizia julibrissin	Silk tree	UPL
Alisma triviale	California water plantain	OBL
Amsinckia menziesii	Rancher's fireweed	UPL
Asclepias fascicularis	Narrow-leaf milkweed	FAC
Avena fatua	Wild oat	UPL
Brassica nigra	Black mustard	UPL
Brodiaea elegans subsp. elegans	Elegant harvest brodiaea	FACU
Bromus diandrus	Ripgut grass	UPL
Bromus hordeaceus	Soft chess	FACU
Bromus madritensis	Foxtail brome	UPL
Carduus pycnocephalus	Italian thistle	UPL
Carex barbarae	Whiteroot sedge	FAC
Centaurea solstitialis	Yellow starthistle	UPL
Centromadia fitchii	Fitch's spikeweed	FACU
Chenopodium album	White pigweed	FACU
Cichorium intybus	Chicory	FACU
Convolvulus arvensis	Bindweed	UPL
Crassula aquatica	Water pygmy-weed	OBL
Croton setiger	Turkey mullein	UPL
Cynodon dactylon	Bermudagrass	FACU
Cyperus eragrostis	Tall flatsedge	FACW
Dichelostemma capitatum	Blue dicks	FACU
Dittrichia graveolens	Stinkwort	UPL
Downingia bicornuta var. bicornuta	Double-horned downingia	OBL
Dysphania ambrosioides	Mexican tea	FAC
Eleocharis macrostachya	Creeping spikerush	OBL
Elymus caput-medusae	Medusahead	UPL
Elymus glaucus	Blue wildrye	FACU
Elymus triticoides	Beardless wildrye	FAC
Epilobium brachycarpum	Summer cottonweed	UPL
Epilobium densiflorum	Dense-flower spike-primrose	FACW
Erigeron canadensis	Canadian horseweed	FACU
Erodium botrys	Broad-leaf filaree	FACU
Erodium cicutarium	Red-stem filaree	UPL

Taxon	Common Name	Wetland Status
Eryngium vaseyi	Coyote thistle	FACW
Eschscholzia californica	California poppy	UPL
Euthamia occidentalis	Western goldenrod	FACW
Festuca myuros	Rattail sixweeks grass	FACU
Festuca perennis	Italian ryegrass	FAC
Geranium dissectum	Cut-leaf geranium	UPL
Geranium molle	Dove's-foot geranium	UPL
Helminthotheca echioides	Bristly ox-tongue	FAC
Hirschfeldia incana	Short-podded mustard	UPL
Holocarpha virgata subsp. virgata	Virgate tarweed	UPL
Hordeum marinum subsp. gussoneanum	Mediterranean barley	FAC
Hordeum murinum	Wall barley	FACU
Hypericum perforatum subsp. perforatum	Klamathweed	FACU
Hypochaeris glabra	Smooth cat's-ear	UPL
Juncus balticus	Baltic rush	FACW
Juncus effusus	Soft rush	FACW
Juncus xiphioides	Iris-leaved rush	OBL
Lactuca serriola	Prickly lettuce	FACU
Lasthenia glaberrima	Smooth goldfields	OBL
Leersia oryzoides	Rice cutgrass	OBL
Leontodon saxatilis	Long-beaked hawkbit	FACU
Lepidium strictum	Peppergrass	UPL
Lupinus bicolor	Miniature lupine	UPL
Lythrum hyssopifolia	Hyssop loosestrife	OBL
Malva neglecta	Common mallow	UPL
Matricaria discoidea	Pineapple-weed	FACU
Medicago polymorpha	California burclover	FACU
Melilotus indicus	Annual yellow sweetclover	FACU
Phalaris lemmonii	Lemmon's canary grass	FACW
Phalaris paradoxa	Paradox canary-grass	FAC
Pinus sp.	Ornamental Pine	UPL
Plagiobothrys stipitatus	Stalked popcorn-flower	FACW
Plantago lanceolata	English plantain	FAC
Platanus acerfolia	Common cudonia	UPL
Poa annua	Annual bluegrass	FAC
Polygonum aviculare	Common knotweed	FAC
Polypogon monspeliensis	Annual beard grass	FACW
Populus fremontii	Fremont cottonwood	FAC
Proboscidea louisianica subsp. louisianica	Common unicorn plant	FACU
Prunus avium	Sweet cherry	UPL

Taxon	Common Name	Wetland Status
Prunus persica	Peach	UPL
Pseudognaphalium canescens	Wright's rabbit-tobacco	FACU
Quercus agrifolia	Coast live oak	UPL
Quercus lobata	Valley oak	FACU
Raphanus sativus	Wild radish	UPL
Rumex acetosella	Sheep sorrel	FACU
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddle dock	FAC
Salix gooddingii	Goodding's black willow	FACW
Schoenoplectus acutus	Hardstem bulrush	OBL
Sesbania punicea	Red sesbania	FACW
Silybum marianum	Milk thistle	UPL
Sinapis arvensis	Wild mustard	UPL
Sonchus asper subsp. asper	Prickly sow-thistle	FAC
Sonchus oleraceus	Common sow-thistle	UPL
Sorghum halepense	Johnsongrass	FACU
Spergularia rubra	Ruby sand-spurrey	FAC
Stellaria media	Common chickweed	FACU
Tragopogon dubius	Yellow salsify	UPL
Tribulus terrestris	Puncture vine	UPL
Trifolium dubium	Little hop clover	UPL
Trifolium hirtum	Rose clover	UPL
Triteleia hyacinthina	White triteleia	FAC
Veronica peregrina subsp. xalapensis	Purslane speedwell	OBL
Vicia sativa	Common vetch	FACU
Vicia villosa	Winter vetch	UPL
Xanthium strumarium	Cocklebur	FAC

Appendix C.
USACOE Aquatic Resources Spreadsheet

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
SW-1	CALIFORNIA	PEM2	DEPRESS	Area	0.119626	ACRE	DELINEATE	38.66509804	-121.4489348	Robla Creek
SW-2	CALIFORNIA	PEM2	DEPRESS	Area	0.118539	ACRE	DELINEATE	38.66472851	-121.4477331	Robla Creek
SW-3	CALIFORNIA	PEM2	DEPRESS	Area	0.196498	ACRE	DELINEATE	38.66470905	-121.4475857	Robla Creek
WS-1	CALIFORNIA	PEM1	SLOPE	Area	0.019667	ACRE	DELINEATE	38.6672279	-121.4511801	Robla Creek

APPENDIX E
GEOTECHNICAL EXPLORATION

GEOTECHNICAL EXPLORATION

SHEHADEH PROPERTY

SACRAMENTO, CALIFORNIA

SUBMITTED

TO

RYLAND HOMES

SACRAMENTO, CALIFORNIA

PREPARED

BY

ENGEO INCORPORATED

PROJECT NO. 7103.4.001.01

DECEMBER 17, 2005
REVISED MARCH 30, 2006

COPYRIGHT © 2006 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED

ENGEO
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
7103.4.001.01

December 17, 2005
Revised March 30, 2006

Mr. Chad Kiltz
Ryland Homes
2400 Del Paso Road, Suite 250
Sacramento, CA 95834

Subject: Shehadeh Property
APN 226-0062-004, 226-0062-008, 226-0062-009,
226-0062-011, and 226-0102-001
Rio Linda Boulevard
Sacramento, California

GEOTECHNICAL EXPLORATION

Dear Mr. Kiltz:

With your authorization, we conducted a geotechnical exploration for the subject property located in Sacramento, California. In our opinion, the subject property is suitable for future residential construction from a geotechnical standpoint, provided that the recommendations contained herein are implemented. The accompanying report contains the findings of our study and geotechnical recommendations for the proposed development.

We are pleased to have been of service to you on this project, and we will be glad to consult further with you and your design team.

Very truly yours,

ENGEO INCORPORATED

FOR: Steve Harris, PE
sdh/jb:gex

Reviewed by:

Daniel S. Haymsch, GE

REGISTERED PROFESSIONAL ENGINEER
RONALD E. BRUGGERS
GE 2094
Exp. 12/31/07
GEOTECHNICAL
STATE OF CALIFORNIA

2213 Plaza Drive • Rocklin, CA 95765 • (916) 786-8883 • Fax (888) 279-2698
www.engeo.com

TABLE OF CONTENTS

Letter of Transmittal

Page

INTRODUCTION 1
Purpose and Scope 1
Site Location and Description 1
Proposed Development 2

GEOLOGY AND SEISMICITY 3
Geology 3
Regional Faulting and Seismicity 3
Field Exploration 4
Laboratory Testing 5
Subsurface Stratigraphy 6
Groundwater Conditions 6

GEOLOGIC AND GEOTECHNICAL HAZARDS 7
Seismic Hazards 7
Ground Rupture 7
Ground Shaking 7
Liquefaction 8
Lurching 9

CONCLUSIONS AND RECOMMENDATIONS 10
General 10
Demolition and Stripping 10
Subgrade Preparation 12
Selection of Materials 12
Fill Placement 12
Foundation Design 13
Subgrade Treatment for Post-Tensioned Mat Foundations 14
Foundation Concrete 14
Slab Moisture Vapor Reduction 15
Secondary Slab-on-Grade Construction 15
Retaining Walls 16
Sound Walls 17
Preliminary Pavement Design 18
Site Surface Drainage 20
Requirements for Landscaping Irrigation 20
Utilities 21

LIMITATIONS AND UNIFORMITY OF CONDITIONS 23

7103.4.001.01
December 17, 2005
Revised March 30, 2006

TABLE OF CONTENTS (Continued)

REFERENCES
FIGURES
APPENDIX A – Boring Logs
APPENDIX B – Laboratory Test Results
APPENDIX C – Guide Contract Specifications

INTRODUCTION

Purpose and Scope

The purpose of this report is to provide you and your design team with the results of our geotechnical study, including recommendations for the design and construction of the proposed residential development located in Sacramento, California.

The scope of our work has included a review of available literature and geologic maps pertaining to the site, exploratory drilling and sampling, laboratory testing on selected samples obtained in our borings, engineering analysis, and preparation of this report summarizing our conclusions and recommendations for design of the proposed development.

A parcel map showing the location of the proposed development was provided to us by Ryland Homes to aid us in our exploration.

This report was prepared for the exclusive use of Ryland Homes and their design team consultants for design of the proposed development. In the event that any changes are made in the character, design or layout of the development, the conclusions and recommendations contained in this report should be reviewed by ENGEO Incorporated to determine if modifications to the report are necessary. This report may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without the express written consent of ENGEO Incorporated.

Site Location and Description

The subject property is located north of the intersection of Rio Linda Boulevard and Marysville Boulevard in Sacramento, California as shown on the Vicinity Map, Figure 1. The

site is approximately 25.2 acres, and identified as Assessor's Parcel Numbers (APN) 226-0062-004, 226-0062-008, 226-0062-009, 226-0062-011, and 226-0102-001 . The site is relatively level and is bordered on the southwest by Rio Linda Boulevard, on the east by a bike path and to the north by undeveloped property.

The property is currently a vacant field. No structures were observed on the site at the time of our reconnaissance. Numerous piles of concrete rubble and debris were located on the northeastern portion of the site and some non-engineered fill was located on the southern portion of the site as shown on the Site Plan, Figure 2.

Proposed Development

Based on discussions with Ryland Homes, the proposed development will consist of constructing single-family residences with interior streets and utilities. We anticipate relatively light loadings for one- or two-story, wood-framed single-family structures. It is our understanding that the site grading for this project will likely include only minor cutting and filling to establish pads and streets.

GEOLOGY AND SEISMICITY

Geology

The geology of the site is mapped as Quaternary Holocene age Riverbank Formation (Qr) (Wagner et al. 1991). The Riverbank Formation is mapped as stream terrace deposits of clay, silt, sand, and gravel lenses. These semi-consolidated lenses are not necessarily continuous and may vary considerably across the site due to ancient stream depositional characteristics.

Regional Faulting and Seismicity

As with the rest of the Central Valley in Northern California, the site is situated between two seismically active regions (CDMG Open-File Report 96-08). According to parameters of the 1997 Uniform Building Code, this site is in Earthquake Zone 3. Our review of geologic literature did not identify the presence of known active or potentially active faults on the project site. The Geologic Map of the Sacramento Quadrangle (Jennings 1992) shows no faults mapped within the property. The California Geological Survey does not list Sacramento as an area included in the Alquist-Priolo earthquake hazard zones.

To evaluate potential levels of ground shaking, we used Blake's computer program, EQFAULT (2004) to locate potential seismic sources within 100 kilometers (62 miles) of the site. Two of the closest known faults classified as active by the State of California Geologic Survey (CGS) are the Foothills Fault System located approximately 19 miles to the east and the Great Valley fault located approximately 30 miles to the west. The Great Valley fault is omitted from the ICBO 1998 document, "Maps of Known Active Fault Near-Source Zones in California and Adjacent Properties of Nevada" based on a lack of surface expression.

Table I lists distances to the closest known active and potentially active faults and summarizes their estimated earthquake magnitudes and ground shaking potentials.

TABLE I

Fault Name	Approximate Distance Mi. (km)	Maximum Moment Mag.[1]	Peak Site Acc. (G) [2]	Est. Site Intensity Mod. Merc.
Foothills Fault System	19 (30)	6.5	0.15	VIII
Great Valley	30 (49)	6.9	0.11	VII
Hunting Creek - Berryessa	43 (69)	7.1	0.07	VII
Concord / Green Valley	44 (71)	6.7	0.06	VI
West Napa	53 (85)	6.5	0.04	V
Mount Diablo	58 (93)	6.7	0.05	VI
Greenville	58 (93)	6.7	0.04	V
Bartlett Springs Fault System	60 (96)	7.6	0.07	VII

1 - SOURCE: CDMG, OPEN-FILE REPORT 96-08.
2 - ATTENUATION RELATION: IDRISS (1994) HORIZ – DEEP SOIL

Field Exploration

Four exploratory borings were drilled on December 6, 2005. The approximate exploration locations are shown on the Site Plan, Figure 2, and the logs of the exploratory borings are included as Figures A-1 through A-4 in Appendix A. The exploration locations were approximately located by estimating from existing features.

Exploratory Borings B-1 through B-4 were drilled with a truck-mounted Mobil Drill B-24 drill rig equipped with 4-inch-diameter solid flight augers. An ENGEO engineer logged the borings in the field and collected soil samples using either a 3.0-inch O.D. California-type split-spoon sampler fitted with 6-inch-long brass liners, or a 2-inch O.D. Standard Penetration Test (SPT) split-spoon sampler. The samplers were advanced with a 140-pound hammer with a

30-inch drop, employing a manual trip hydraulic hammer system. The penetration of the samplers into the native materials was field recorded as the number of blows needed to drive the sampler 18 inches in 6-inch increments. Blow count results on the boring logs were recorded as the number of blows required for the last one foot of penetration and have not been converted using any correction factors.

The logs depict subsurface conditions within the borings at the time the exploration was conducted. Subsurface conditions at other locations may differ from conditions noted at these boring locations. The passage of time may result in altered subsurface conditions. In addition, stratification lines represent the approximate boundaries between soil types and the transitions may be gradual.

Laboratory Testing

Selected samples recovered during drilling were tested to determine the following soil characteristics:

Characteristic	Test Method	Location of Results Within this Report
Natural Unit Weight and Moisture Content	ASTM D-2216	Appendix A
Plasticity Index	ASTM D-4318	Appendix B
Gradation	ASTM D-422	Appendix B

Unit weight and moisture content test results are shown on the boring logs (Appendix A, Figures A1 through A4) while the remaining test results are presented in Appendix B.

Subsurface Stratigraphy

The soils encountered in our exploration were variable across the site but generally consisted of varying mixtures of clay and silt with occasional thin lenses of silty sand to sandy silt to the maximum depth explored of 20 feet. This description is consistent with the alluvial nature of the soil deposits at the site. All materials encountered were at least dense/stiff in consistency. The surficial soil generally has a moderate to high expansion potential. The exploratory boring logs presented in Appendix A provide detailed descriptions of the soil conditions at each location explored.

Groundwater Conditions

Groundwater was not encountered within our borings. Based on review of the historical data for a local well, as published on the State of California Department of Water Resources Web Site, the groundwater in the area is approximately 40 feet below the existing ground surface. Fluctuations in groundwater levels are expected to occur seasonally in response to changes in precipitation, irrigation, and other factors not evident at the time of our exploration.

GEOLOGIC AND GEOTECHNICAL HAZARDS

The site was evaluated with respect to known geological and geotechnical hazards common to the Sacramento Area. The primary hazards identified are described below. None of the hazards listed are considered unique to the property and affect most sites in the region.

Seismic Hazards

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking, ground lurching, soil liquefaction, and lateral spreading. These hazards are discussed in the following sections. Based on topographic and lithologic data, the risk of regional subsidence or uplift, or flooding from tsunamis or seiches is considered low to negligible at the site.

Ground Rupture. Since there are no known active faults crossing the property, and the site is not located within an Earthquake Fault Special Study Zone, it is our opinion that primary fault ground rupture is unlikely at the subject property.

Ground Shaking. The most significant seismic hazard to the proposed site is the secondary hazard of ground shaking. Earthquakes of moderate to high magnitude are expected to occur within Northern California and may occur during the design life of the project. These events may cause moderate ground shaking at the subject site during the design life of the proposed structures.

To mitigate the ground shaking effects, all structures should be designed using sound engineering judgment and the latest Uniform Building Code (UBC) requirements as a minimum.

The site is classified as a stiff soil profile. The following UBC parameters are provided for project design purposes.

1997 UNIFORM BUILDING CODE – Chapter 16

ITEM	DESIGN VALUE	UBC SOURCE
Seismic Zone	3	Figure 16-2
Seismic Zone Factor	0.30	Table 16-I
Soil Profile Type	S_D	Table 16-J
Seismic Source Type	B	Table 16-U
Seismic Coefficient, C_a	0.36	Table 16-Q
Seismic Coefficient, C_v	0.54	Table 16-R

Seismic design provisions of current building codes generally prescribe minimum lateral forces, applied statically to the structure, combined with the gravity forces of dead and live loads. The code-prescribed lateral forces are generally substantially smaller than the expected peak forces that would be associated with a major earthquake. Therefore, structures should be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute a guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, it is reasonable to expect that a well-designed and well-constructed structure will not collapse or cause loss of life in a major earthquake (SEAOC, 1996).

Liquefaction. Liquefaction is a phenomenon in which saturated, cohesionless soils are subject to a temporary, but essentially total, loss of shear strength because of pore pressure buildup under the reversing cyclic shear stresses associated with earthquakes. The potential for liquefaction is

considered to be low because of the depth to groundwater, dense nature of the site soils, and the relatively low levels of expected ground shaking.

Dynamic Densification Due to Earthquake Shaking. Densification of loose granular soils above the groundwater level can cause settlement due to earthquake-induced vibrations. The potential for dynamic densification at the site is expected to be low.

Lateral Spreading. Lateral spreading is a failure within a nearly horizontal soil zone that causes the overlying soil mass to move down a gentle slope or toward a free face such as a creek or open body of water. Lateral spreading is most often associated with strength loss due to liquefaction. As described above, the liquefaction potential of the subsurface soils is considered to be low. For this reason, the potential for lateral spreading at the site during seismic shaking is also considered to be low.

Lurching. Ground lurching occurs as a result of the rolling motion imparted to the ground surface during energy released by an earthquake. The deformation of the ground surface by such rolling motion can cause ground cracks to form. The potential for the formation of these cracks is considered greater at contacts between material with significantly different properties, such as deep soft soil and bedrock. Such an occurrence is possible at the subject site as in other locations in the Sacramento Area, but the offset or strain is expected to be minor.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the exploration and laboratory test results, it is our opinion that the site is feasible for construction of the proposed single-family residential subdivision from a geotechnical standpoint. The recommendations included in this report, along with other sound engineering practices, should be incorporated in the design and construction of the project. ENGEO should be retained to review the development plan prior to construction to confirm that the conclusions contained herein are appropriate and valid for the design-specific details.

Based on a review of the surrounding developments, we anticipate that minor grading will be required to provide drainable grades for the site and building pads. Grading operations should meet the requirements of the Guide Contract Specifications included in Appendix C and must be observed and tested by ENGEO's field representative. ENGEO should be notified a minimum of 72 hours prior to grading in order to coordinate its schedule with the grading contractor.

Ponding of stormwater, other than within engineered detention basins, should not be permitted at the site, particularly during work stoppage for rainy weather. Before the grading is halted by rain, positive slopes should be provided to carry the surface runoff to storm drainage structures in a controlled manner to prevent erosion damage.

Demolition and Stripping

Grading should begin with the removal of non-engineered fill, buried pipes, irrigation lines, debris piles, old foundations, designated fences, trees and associated root systems, and any other

deleterious materials. Underground structures that will be abandoned or are expected to extend below proposed finished grades should be removed from the project site.

All vegetation in areas to be graded should also be removed as necessary for project requirements. The depth of removal of these materials should be determined by ENGEO at the time of grading.

Tree roots should be removed to a depth of 2 to 3 feet below existing grades. The organically contaminated materials should not be used in proposed building pads or pavement areas. The organics should be stockpiled and may be used in landscape areas or may be off hauled. Any debris found within any areas to be graded should be removed.

The actual depth of removal should be determined in the field by a representative of ENGEO based on actual conditions encountered during the site grading. Excavations resulting from demolition and stripping below design grades should be cleaned to a firm undisturbed, non-yielding soil surface as determined by ENGEO.

As an alternative to stripping of organic material, agricultural fields and/or fallow open fields may be cut/harvested as low to the ground as possible and as close to the time of grading as practical. The organic material should be hauled off site or to landscaping areas subject to approval by the landscape architect. The remaining stubs of the crops/grass and roots then may be thoroughly disced into the underlying soil providing the organic content of the resulting soil does not exceed 3 percent organic content.

All backfilling of depressions resulting from demolition, stripping, or removal of tree root bulb excavations, should be observed by ENGEO. ENGEO should be notified prior to the backfill of

any depression to observe the backfill operations. Tree removal should be monitored by ENGEO on a part-time basis, with full-time observation of the backfill operations.

Subgrade Preparation

After the site has been properly cleared, stripped and necessary excavations have been made, a minimum of the upper 12 inches should be scarified, moisture conditioned, and compacted in accordance with the recommendations presented below in the "Fill Placement" section.

Except for landscaping areas, the site should be underlain by a minimum depth of 12 inches of moisture conditioned and compacted engineered fill. The compaction recommendations for the preparation of existing soil prior to fill placement are the same as those for engineered fill, as described in a subsequent section of this report.

Selection of Materials

With the exception of any organically contaminated materials (soil that contains more than 3 percent organic material by weight), the site soils are suitable for use as engineered fill. ENGEO should be informed when import materials are planned for the site. Import materials should be submitted and approved by ENGEO prior to delivery at the site; should be free of organic material, debris, and fragments larger than 6 inches in greatest dimension; and should have a Plasticity Index consistent with the on-site material.

Fill Placement

Once the subgrade is prepared in accordance with the above recommendations, the surface of all areas to receive fill should be scarified to a minimum depth of 12 inches, moisture conditioned, and recompacted as engineered fill to provide adequate bonding with the initial lift of fill. All fills

should be placed in uncompacted lifts not exceeding 8 inches. In cut portions of the site, a 12-inch scarification, moisture conditioning and recompaction of the exposed subgrade will be necessary, below the finished subgrade elevation.

The following compaction control recommendations should be applied to all fills:

Test Procedures:	ASTM D-1557 (latest edition).
Required Moisture Content:	A minimum of 4 percentage points above optimum moisture content.
Relative Compaction:	At between 88 and 92 percent relative compaction.

It is important that all site preparation, including demolition and stripping, be done under the observation of ENGEO and should be carried out according to the requirements contained herein.

Foundation Design

It is our understanding that Ryland Homes prefers to use post-tensioned (PT) concrete mat slabs at the subject site. It is our opinion that PT mat foundations would be appropriate for the proposed residential structures. Post-tensioned mats should be designed according to methods recommended in the Post Tensioning Institute "Design and Construction of Post-Tensioned Slabs-on-ground" Second Edition dated 1996.

PT mats should be a minimum of 10 inches thick with a 2-inch thickened edge and be designed for an average allowable bearing pressure of 1,000 pounds per square foot (psf) for dead plus live loads, with maximum localized bearing pressures of 1,500 psf at column or wall loads. Allowable bearing pressures can be increased by one-third for all loads including wind or seismic.

Post-tensioned mats should be designed according to the method recommended in "Design and Construction of Post-Tensioned Slabs-On-Ground" (Post-Tensioning Institute, 1996). Based upon the existing soil conditions, we recommend using the following soil criteria for design of the post-tensioned mat foundations:

Center Lift Condition:	Edge Moisture Variation Distance, e_m= 5.0 feet Differential Soil Movement, y_m = 2.6 inches
Edge Lift Condition:	Edge Moisture Variation Distance, e_m = 4.0 feet Differential Soil Movement, y_m= 1.1 inch

Recommended minimum mat thickness = 10 inches, with 2-inch thickened edge if sand bedding is used.

The actual thickness of the slab should be determined by the project Structural Engineer using the above-mentioned criteria. The minimum soil backfill height against the slab at the perimeter should be 6 inches.

Subgrade Treatment for Post-Tensioned Mat Foundations. The subgrade material under post-tensioned mats should be uniform. The pad subgrade should be moisture conditioned to a moisture content of at least 5 percentage points above optimum to a depth of 12 inches. The subgrade should be thoroughly soaked prior to placing the concrete. The subgrade should not be allowed to dry prior to concrete placement.

Foundation Concrete. No sulfate testing was performed as part of this study. We recommend that sulfate testing be performed on the graded lots prior to placing foundation concrete. As an alternative to performing sulfate testing, we recommend that the Structural Engineer consider using Type V plus pozzolan cement in the foundation and slab concrete for the subject site. A maximum water cement ratio of 0.45 and a minimum compressive strength of 4,500 psi should

be used for the foundation concrete if sulfate testing is not performed. Structural engineering requirements for strength design may result in more stringent concrete specifications.

Slab Moisture Vapor Reduction. When buildings are constructed with concrete mat foundations, water vapor from beneath the concrete mat will migrate through the slab and into the building. This water vapor can be reduced but not stopped. Vapor transmission can negatively affect floor coverings and lead to increased moisture within a building. When water vapor migrating through the slab would be undesirable, we recommend that the concrete be underlain by a moisture retarder that meets ASTM E 1745 – 97 Class A requirements for water vapor permeance, tensile strength, and puncture resistance. All joints and penetrations of the vapor retarder medium should be sealed.

The Structural Engineer or a Concrete Technology expert should be consulted on the advisability of using a 2-inch-thick sand cushion (Section 2.03, Part I of Guide Contract Specifications) under slabs for concrete curing purposes.

Secondary Slab-on-Grade Construction

Secondary slabs include exterior walkways, driveways and steps. Secondary slabs-on-grade should be designed specifically for their intended use and loading requirements. Cracking of the exterior flatwork is normal as it is part of the concrete curing process and should be expected. Frequent control joints should be provided during slab construction for control of cracking.

Secondary slabs-on-grade should have a minimum thickness of 4 inches and should be underlain by a 4-inch-thick layer of clean, crushed rock or gravel. As a minimum requirement, slabs-on-grade should be reinforced with steel bars; in our experience, welded wire mesh may

not be sufficient to control slab cracking. The Structural Engineer should design the actual slab reinforcement.

Exterior slabs should be constructed with thickened edges extending at least 6 inches into compacted soil to minimize water infiltration and should slope away from the building to prevent water from flowing toward the foundations. Consideration should be given to lightly moistening the site soils just prior to concrete placement.

Retaining Walls

Unrestrained drained retaining walls constructed on level ground may be designed for active lateral fluid pressures determined as follows:

Backfill Slope Condition (horizontal:vertical)	Active Pressure (pound per cubic foot (pcf))
Level	50
4:1	55
3:1	60
2:1	70

Passive pressures acting on foundations and keyways may be assumed as 250 pounds per cubic foot (pcf) provided that the area in front of the retaining wall is level for a distance of at least 10 feet or three times the depth of foundation and keyway, whichever is greater. The upper one foot of soil should be excluded from passive pressure computations unless it is confined by pavement or a concrete slab.

The friction factor for sliding resistance may be assumed as 0.35. We recommend that retaining wall footings be designed using an allowable bearing pressure of 2,500 pounds per square foot in firm native materials or fill. Appropriate safety factors against overturning and sliding should be incorporated into the design calculations.

The Geotechnical Engineer should be consulted on design values where surcharge loads, such as from automobiles, are expected or where a downhill slope exists below a proposed wall.

All retaining walls should be provided with drainage facilities to prevent the build-up of hydrostatic pressures behind the walls. Wall drainage may be provided using a 4-inch-diameter perforated pipe embedded in Class 2 permeable material (Part I of Guide Contract Specifications, Section 2.05B), or free-draining gravel surrounded by synthetic filter fabric. The width of the drain blanket should be at least 12 inches. The drain blanket should extend to about one foot below the finished grades. As an alternative, prefabricated synthetic wall drain panels can be used. The upper one foot of wall backfill should consist of on-site clayey soils. Collector perforated pipes should be directed to an outlet approved by the Civil Engineer. Subdrain pipe, drain blanket and synthetic filter fabric should meet the minimum requirement as listed in Part I of the Guide Contract Specifications.

All backfill should be placed in accordance with recommendations provided above for engineered fill. Light equipment should be used during backfill compaction to minimize possible overstressing of the walls.

Sound Walls

Sound walls may be supported by a pier-and-grade-beam foundation provided the following recommendations are incorporated into the design. Pier design and construction criteria are as follows:

Pier diameter:	Minimum 12 inches.
Pier depth:	Minimum 8 feet deep.

Maximum allowable skin friction:	500 pounds per square foot (psf). This value may be increased by one-third when considering seismic or wind loads. Exclude the upper 36 inches from pier load capacity computations.
Minimum pier spacing:	3 pier diameters, center-to-center. Where closer spacings are unavoidable, the piers should be designed with a reduced skin friction of 330 psf.

An equivalent fluid weight of 250 pounds per cubic foot acting on 1½ times the pier diameter may be used to evaluate passive resistance. The passive pressure may be increased by one-third for transient loads such as wind or seismic. The passive earth pressure starts at a depth of 12 inches or where there is 10 feet horizontal distance to daylight in sloping areas.

The Structural Engineer should design the pier reinforcement, but, as a minimum, at least two No. 4 rebars should extend the full length of each pier. Where applicable, the pier reinforcement should be tied to the grade beam as recommended by the Structural Engineer.

If the base of the sound wall retains soil, we recommend the design consider the lateral loads imposed by the soils using the design criteria presented in the Retaining Walls section above.

Preliminary Pavement Design

No R-Value testing was performed as part of this exploration; however, based on our experience in the area, we estimate that an R-value of 5 is appropriate for preliminary design. Using estimated traffic indices for various pavement loading requirements, we developed the following recommended pavement sections using Procedure 608 of the Caltrans Highway Design Manual (including the asphalt factor of safety), presented in the table below.

PRELIMINARY PAVEMENT SECTIONS

Traffic Index	AC (inches)	AB (inches)
4.5	2.5	9.0
5	3.0	10.0
5.5	3.5	11.0
6	3.5	13.0
6.5	4.0	14.0
7	4.0	16.0
8	4.5	19.0
9	5.5	21.0

Notes: AC is asphaltic concrete
AB is aggregate base Class 2 Material with minimum R = 78

The Traffic Index should be determined by the Civil Engineer or appropriate public agency. Once grading of the proposed street subgrade is completed, additional R-Value testing should be performed to verify or change the above preliminary pavement sections. Pavement construction and materials should comply with the requirements of the Standard Specifications of the State of California Division of Highways, City of Sacramento requirements and the following minimum requirements.

- All pavement subgrades should be scarified to a depth of 12 inches below finished subgrade elevation, moisture conditioned to at least 2 percentage points above optimum moisture, and compacted to a minimum of 95 percent relative compaction.

- Subgrade soils should be in a stable, non-yielding condition at the time aggregate base materials are placed and compacted.

- Adequate drainage must be designed by the project Civil Engineer such that the subgrade soils and aggregate base materials are not allowed to become saturated.

- Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate base and should be compacted to at least 95 percent of maximum dry density at a minimum moisture content of optimum.

- Asphalt paving materials should meet current Caltrans specifications for asphalt concrete.

- All concrete curbs separating pavement and irrigated landscaped areas should extend into the subgrade and below the bottom of adjacent aggregate base materials.

Site Surface Drainage

The project site should be positively graded at all times to provide for rapid removal of surface water runoff away from foundation systems and to prevent ponding of water under floors or seepage toward foundations, pavements, or flatwork at any time during or after construction. Ponding of water may result in undesirable weakening of the subgrade materials, loss of compaction, slab and excessive slab or foundation movements.

No ponding of stormwater should be permitted on the building pads. All lots should be graded to drain individually. As a minimum requirement, finished grades should provide a slope of at least 3 percent within 5 feet from the exterior walls at right angles to them to allow surface water to drain positively away from the structures. Care should be exercised to provide that landscape mounds will not interfere with the above requirements.

Stormwater from roof downspouts should be carried away in closed conduits to the curb or an approved outlet structure.

Requirements for Landscaping Irrigation

Planted areas should be avoided immediately adjacent to the residences. If planting adjacent to the residences is desired, the use of plants that require very little moisture is recommended. Sprinkler systems should not be installed where they may cause ponding or saturation of foundation soils within 3 feet from building walls or under the structures.

Irrigation of landscape areas should be limited strictly to that necessary for plant growth. Excessive irrigation could result in progressive saturation, weakening and possible swelling of the foundation soils. The Landscape Architect should be aware of these requirements. Water that is allowed to saturate foundation soils may have adverse effects on the structures.

The project Landscape Architect and prospective owners and their landscape maintenance personnel should be informed of the grading and surface drainage requirements included in this report.

Utilities

It is recommended that all utility trench backfill be done under the observation of ENGEO. Utility trenches in areas to be paved should also be constructed in accordance with Sacramento County requirements.

Where trenches are located outside of city pavement and sidewalk areas, the pipe zone backfill (i.e. material beneath and immediately surrounding the pipe) may consist of a well-graded import or native material less than ¾ inch in maximum dimension. Trench backfill compaction and moisture conditioning should be in accordance with general fill compaction recommendations.

In general, uniformly graded gravel should not be used for pipe or trench zone backfill because of the potential for migration of: (1) soil into the relatively large void spaces found in this type of material and (2) water along trenches backfilled with this type of material.

It is the responsibility of the contractor to provide safe and stable trench side walls during utility trench construction. The trench side wall should either be sloped back to a safe or stable angle or be supported by shoring in accordance with the CAL-OSHA and/or the Sacramento County requirements.

Utility trenches should not be located adjacent to any foundation areas unless the placement, depth and backfill materials to be used are reviewed by ENGEO. Utility trenches constructed parallel to foundations should be located entirely above a plane extending down from the lower edge of the footing at an angle of 45 degrees. Utility companies and Landscape Architects should be made aware of this recommendation. Compaction of trench backfill by jetting should not be allowed at this site.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report is issued with the understanding that it is the responsibility of the owner to transmit the information and recommendations of this report to developers, contractors, buyers, architects, engineers, and designers for the project so that the necessary steps can be taken by the contractors and subcontractors to carry out such recommendations in the field. The conclusions and recommendations contained in this report are solely professional opinions.

We strived to perform our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty is expressed or implied.

We developed this report with limited subsurface exploration data. We assumed that our subsurface exploration data is representative of soil and groundwater conditions across the site. Considering possible underground variability of soil and groundwater, additional costs may be required to complete the project. We recommend that the owner establish a contingency fund to cover such costs. If unexpected conditions are encountered, notify ENGEO immediately to review these conditions and provide additional and/or modified recommendations, as necessary.

This report is based upon field and other conditions discovered at the time of preparation of ENGEO's work. This document must not be subject to unauthorized reuse, that is, use without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time. Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to ENGEO's work. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include on-site construction

observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims, including, but not limited to claims arising from or resulting from the performance of such services by other persons or entities, and any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

SELECTED REFERENCES

Blake, T. F.; 2004, EQFAULT, A Computer Program of the Deterministic Prediction of Peak Horizontal Acceleration from Digitized California Faults. Fault data updated to California Division of Mines and Geology California Fault Parameters (CDMG OFR 96-08).

Boore, D. M., Joyner, W. B., and Fumal, T. E., 1993, Estimation of Response Spectra and Peak Accelerations from Western North American Earthquakes: An Interim Report. United States Geological Survey, Open-File Report 93-509.

California Division of Mines and Geology (CDMG) and the International Conference of Building Officials (ICBO), 1998, Determining Distances from Faults Within and Bordering the State of California for the 1997 Uniform Building Code.

Idriss, I. M., 1994, Attenuation Coefficients for Deep and Soft Soil Conditions, in Blake, T.F., 1996, EQSEARCH computer program, referenced as personal communication to Blake, page 106.

International Conference of Building Officials, 1997, Uniform Building Code.

International Conference of Building Officials (ICBO), 1998, Maps of Known Active Fault Near-Source Zones in California and Adjacent Properties of Nevada.

Peterson, et al., 1996, Probabilistic Seismic Hazard Assessment for the State of California: California Division of Mines and Geology Open File Report 96-08.

SEAOC, 1996, Recommended Lateral Force Requirements and Tentative Commentary.

United States Department of Agriculture Soil Conservation Service, 1992, Soil Survey of San Joaquin County, California.

Wagner, D.L., et al., Geologic Map of the Sacramento Quadrangle, 1981, California Division of Mines and Geology.

LIST OF FIGURES

Figure 1	Vicinity Map
Figure 2	Site Plan

COPYRIGHT © 2005 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.

N

0 FEET 2000

0 METERS 1000

BASE MAP SOURCE: MS STREETS AND TRIPS

ENGEO INCORPORATED
EXCELLENT SERVICE SINCE 1971

VICINITY MAP
SHEHADEH PROPERTY
SACRAMENTO, CALIFORNIA

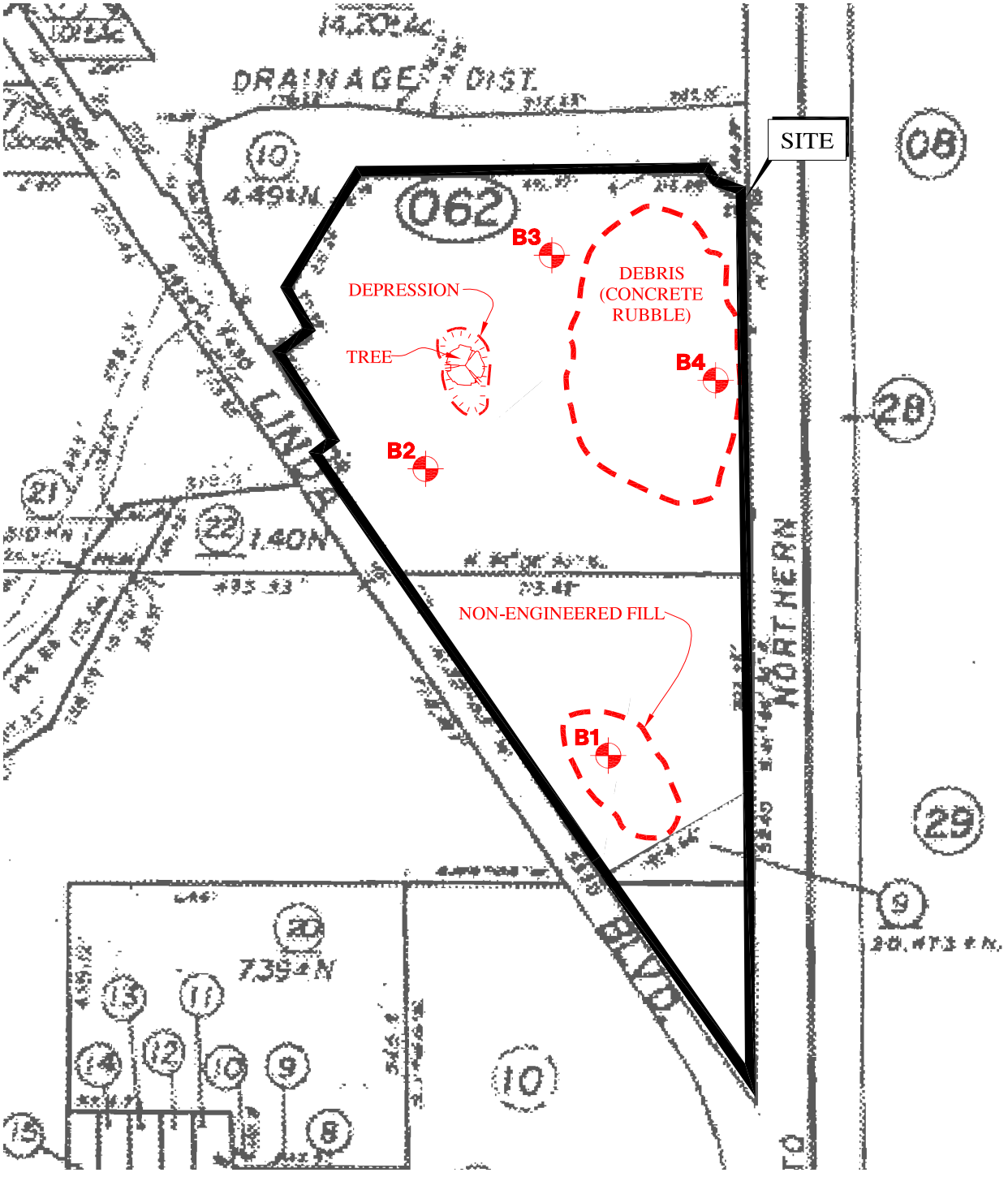
PROJECT NO.:	7103.4.001.01
DATE:	MARCH 2006
DRAWN BY: PC	CHECKED BY: SH

FIGURE NO. 1

ORIGINAL FIGURE PRINTED IN COLOR

G:\Drafting\DRAFTING2_Dwg\7103\001\GEX\7103400101-GEX1-VicMap-0306.dwg 3-31-06 08:14:06

COPYRIGHT © 2006 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.



N

0 FEET 300

0 METERS 150

EXPLANATION

B4 APPROXIMATE LOCATION OF BORING

BASE MAP SOURCE: ASSESSOR'S OFFICE SACRAMENTO COUNTY

ENGEO INCORPORATED
EXCELLENT SERVICE SINCE 1971

SITE PLAN
SHEHADEH PROPERTY
SACRAMENTO, CALIFORNIA

PROJECT NO.:	7103.4.001.01
DATE:	MARCH 2006
DRAWN BY: PC	CHECKED BY: SH

FIGURE NO. 2

ORIGINAL FIGURE PRINTED IN COLOR

G:\Drafting\DRAFTING2_Dwg\7103\001\GEX\7103400101-GEX2-SiteMap-0306.dwg 3-31-06 08:11:5

APPENDIX A

ENGEO INCORPORATED

Boring Logs A-1 through A-4

7103.4.001.01
December 17, 2005
Revised March 30, 2006

KEY TO BORING LOGS

	MAJOR TYPES		DESCRIPTION
COARSE-GRAINED SOILS MORE THAN HALF OF MAT'L LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW - Well graded gravels or gravel-sand mixtures GP - Poorly graded gravels or gravel-sand mixtures
		GRAVELS WITH OVER 12 % FINES	GM - Silty gravels, gravel-sand and silt mixtures GC - Clayey gravels, gravel-sand and clay mixtures
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW - Well graded sands, or gravelly sand mixtures SP - Poorly graded sands or gravelly sand mixtures
		SANDS WITH OVER 12 % FINES	SM - Silty sand, sand-silt mixtures SC - Clayey sand, sand-clay mixtures
FINE-GRAINED SOILS MORE THAN HALF OF MAT'L SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50 % OR LESS		ML - Inorganic silt with low to medium plasticity CL - Inorganic clay with low to medium plasticity OL - Low plasticity organic silts and clays
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50 %		MH - Inorganic silt with high plasticity CH - Inorganic clay with high plasticity OH - Highly plastic organic silts and clays
	HIGHLY ORGANIC SOILS		PT - Peat and other highly organic soils

GRAIN SIZES

U.S. STANDARD SERIES SIEVE SIZE: 200, 40, 10, 4

CLEAR SQUARE SIEVE OPENINGS: 3/4 ", 3", 12"

SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT (S.P.T.)
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	STRENGTH*	BLOWS/FOOT (S.P.T.)
VERY SOFT	0-1/4	0-2
SOFT	1/4-1/2	2-4
MEDIUM STIFF	1/2-1	4-8
STIFF	1-2	8-15
VERY STIFF	2-4	15-30
HARD	OVER 4	OVER 30

MOISTURE CONDITION

DRY	Absence of moisture, dusty, dry to touch
MOIST	Damp but no visible water
WET	Visible freewater
SATURATED	Below the water table

MINOR CONSTITUENT QUANTITIES (BY WEIGHT)

TRACE	Particles are present, but estimated to the less than 5%
SOME	5 to 15%
WITH	15 to 30%
.....Y	30 to 50%

SAMPLER SYMBOLS

- Modified California (3" O.D.) sampler
- California (2.5" O.D.) sampler
- S.P.T. - Split spoon sampler
- Shelby Tube
- Continuous Core
- Bag Samples
- Grab Samples
- NR No Recovery

LINE TYPES

- ———— Solid - Layer Break
- – – – – – – Dashed - Gradational or approximate layer break

GROUND-WATER SYMBOLS

- Groundwater level during drilling
- Stabilized groundwater level

ENGEO INCORPORATED
EXCELLENT SERVICE SINCE 1971

(S.P.T.) Number of blows of 140 lb. hammer falling 30" to drive a 2-inch O.D. (1-3/8 inch I.D.) sampler

* Unconfined compressive strength in tons/sq. ft., asterisk on log means determined by pocket penetrometer

LOG OF BORING B1

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 41 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Safety Hammer

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		SANDY SILT (ML), light gray, hard, moist, slight plasticity, with some gravel.						
						31	13.6	114.3	+4.5*
	1		SILTY CLAY (CL), dark gray, hard, moist, slight to moderate plasticity, with some sand.			55/5"	12.5	107.1	4.5*
5									
	2					50/4"	16.4	97.8	
			Becomes light gray, slight plasticity.						
						50/4"	15.2		4.0*
10	3								
	4		CLAYEY SILT (ML), dark brown, hard, moist, non to slight plasticity, with trace sand.						
						54/6"			
15									
	5								
			SILTY CLAY (CL), grayish white, hard, moist, slight plasticity, slightly cemented, interlayer with clayey silt.						
	6					59/6"			+4.5*
20			Bottom of boring at 20 feet. No groundwater encountered.						
	7								
25									
	8								
	9								
30									

LOG OF BORING B2

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 40 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Sfety Hammer

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		SILTY CLAY (CL), dark gray, hard, moist, slight to moderate plasticity, with trace gravel.			50/4"	13.2		+4.5*
	1		CLAYEY SILT (ML), light gray, hard, moist, slight plasticity.			63	15.5		
5	2					50/5"	14.1		
			SILTY CLAY (CL), grayish white, hard, moist, slight to moderate plasticity, with trace sand.			75			+4.5*
10	3								
	4		CLAYEY SILT (ML), dark gray, stiff, moist, slight plasticity.			55/6"			2.0
15	5								
			With some sand.			52			
20	6		Bottom of boring at 20 feet. No groundwater encountered.						
25	7								
	8								
30	9								

LOG OF BORING B3

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 40 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Safety Hammer

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		CLAY (CH), black, stiff, moist, moderate plasticity, with trace sand.			25	19.4	104.4	2.0*
	1		CLAYEY SILT (ML), brown, hard, moist, slight plasticity, with trace sand.			50/5"	14.8	107.5	4.5*
5			With some sand.						
	2					50/4"	14.6	113.8	
			Becomes grayish white.			59			+4.5*
10	3								
	4		Becomes brown, with some fine-grained sand.			53/6"			
15	5								
			SILTY SAND (SM), brown, very dense, moist, medium-grained sand.			50/4"	21.7	87.7	
20	6		Bottom of boring at 20 feet. No groundwater encountered.						
25	7								
	8								
30	9								

LOG OF BORING B4

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 40 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Safety Hammer

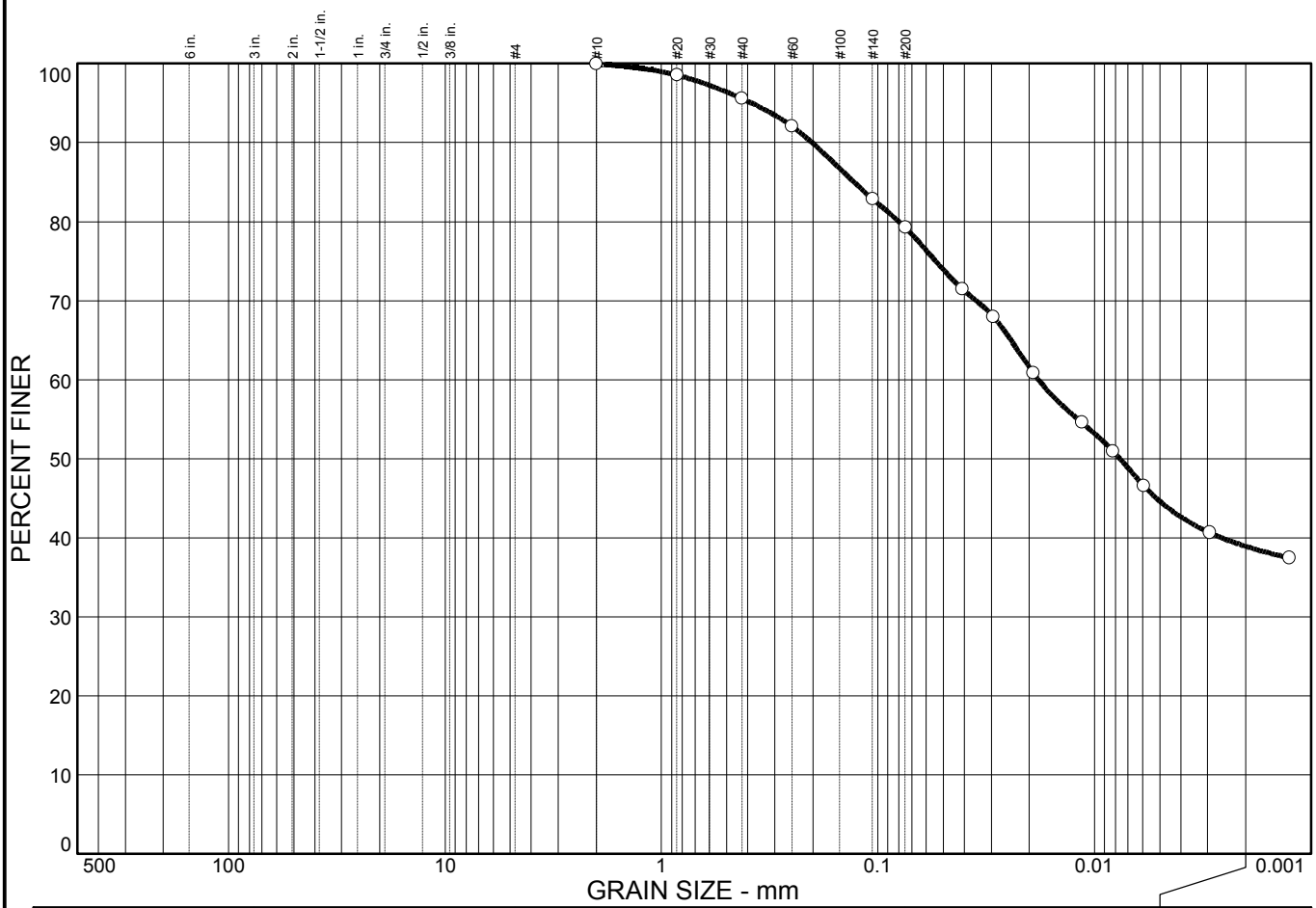
Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		CLAY (CL), dark gray, stiff, moist, low plasticity, with layer of sand.			50/3"			+4.5*
	1		CLAYEY SILT (ML), brown, stiff, moist, low plasticity, with trace sand.			50/6"	10.3		
5	2		SANDY SILT (ML), brown, stiff, moist, no plasticity.			56/6"	11.5		
						52			
10	3								
	4		SILTY SAND (SM), dark brown, very dense, cemented, moist, fine- to medium-grained sand.			66			
15	5								
	6					47			
20			Bottom of boring at 20 feet. No groundwater encountered.						
	7								
25	8								
	9								
30									

APPENDIX B

LABORATORY TEST RESULTS

Particle Size Distribution Reports (2 Pages)
Liquid and Plastic Limit Test Report (1 Page)

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	20.7	40.3	39.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	98.6		
#40	95.6		
#60	92.1		
#140	82.9		
#200	79.3		

* (no specification provided)

Soil Description

Black silty clay with sand

Atterberg Limits

PL= 16 LL= 47 PI= 31

Coefficients

D_{85}= 0.129 D_{60}= 0.0182 D_{50}= 0.0076
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO=

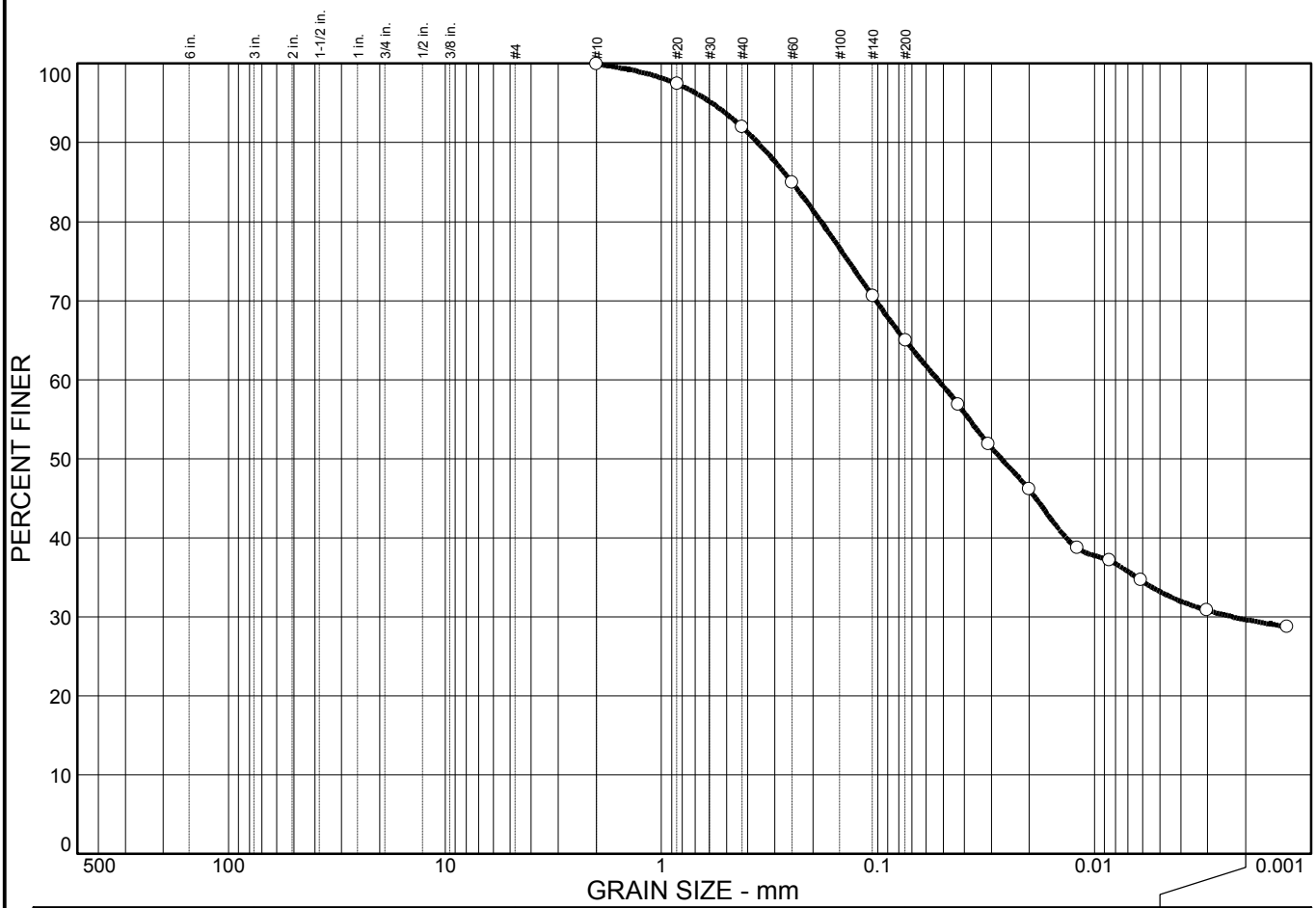
Remarks

Sample No.: B3@1.5 **Source of Sample:** GEX **Date:** 12/14/05
Location: **Elev./Depth:** 1.5 feet

ENGEO INCORPORATED

Client:
Project: Shehadeh Property-Geotechnical Report
Project No: 7103.4.001.01 **Figure**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	35.0	35.3	29.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	97.5		
#40	92.0		
#60	85.0		
#140	70.6		
#200	65.0		

* (no specification provided)

Soil Description

Dark gray sandy clay

Atterberg Limits

PL= 13 LL= 36 PI= 23

Coefficients

D_{85}= 0.250 D_{60}= 0.0529 D_{50}= 0.0269
D_{30}= 0.0022 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO=

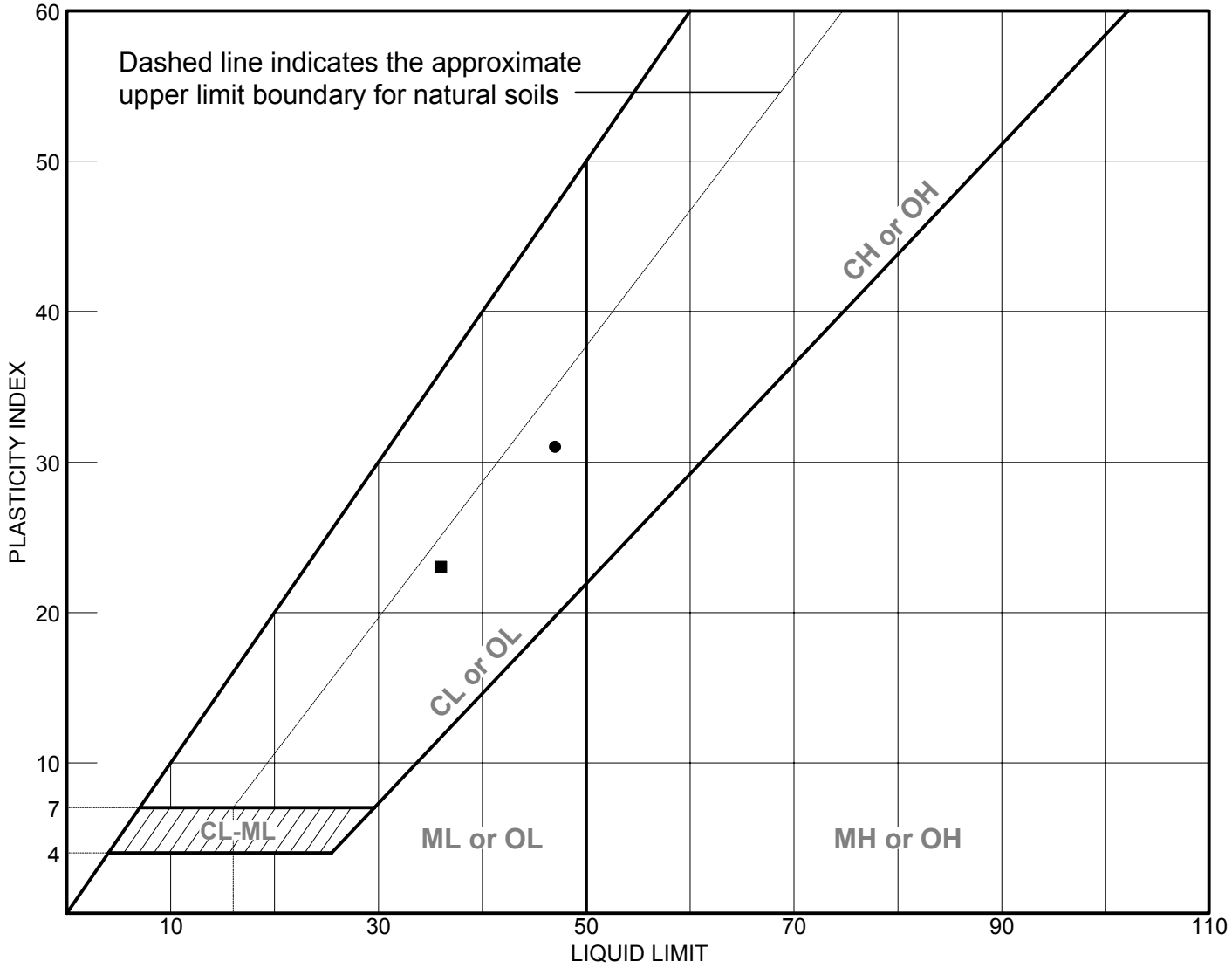
Remarks

Sample No.: B4@2.0 **Source of Sample:** GEX **Date:** 12/14/05
Location: **Elev./Depth:** 2.0 feet

ENGEO INCORPORATED

Client:
Project: Shehadeh Property-Geotechnical Report
Project No: 7103.4.001.01 **Figure**

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	GEX	B3@1.5	1.5 feet		16	47	31	CL
■	GEX	B4@2.0	2.0 feet		13	36	23	CL

LIQUID AND PLASTIC LIMITS TEST REPORT **ENGEO INCORPORATED**	**Client:** **Project:** Shehadeh Property-Geotechnical Report **Project No.:** 7103.4.001.01 **Figure**

APPENDIX C

Guide Contract Specifications

7103.4.001.01
December 17, 2005
Revised March 30, 2006

GUIDE CONTRACT SPECIFICATIONS

PART I - EARTHWORK

PREFACE

These specifications are intended as a guide for the earthwork performed at the subject development project. If there is a conflict between these specifications (including the recommendations of the geotechnical report) and agency or code requirements, it should be brought to the attention of ENGEO and Owner prior to contract bidding.

PART 1 - GENERAL

1.01 WORK COVERED

A. Grading, excavating, filling and backfilling, including trenching and backfilling for utilities as necessary to complete the Project as indicated on the Drawings.

B. Subsurface drainage as indicated on the Drawings.

1.02 CODES AND STANDARDS

A. Excavating, trenching, filling, backfilling, and grading work shall meet the applicable requirements of the Uniform Building Code and the standards and ordinances of state and local governing authorities.

1.03 SUBSURFACE SOIL CONDITIONS

A. The Owners' Geotechnical Exploration report is available for inspection by bidder or Contractor. The Contractor shall refer to the findings and recommendations of the Geotechnical Exploration report in planning and executing his work.

1.04 DEFINITIONS

A. Fill: All soil, rock, or soil-rock materials placed to raise the grades of the site or to backfill excavations.

B. Backfill: All soil, rock or soil-rock material used to fill excavations and trenches.

C. On-Site Material: Soil and/or rock material which is obtained from the site.

D. Imported Material: Soil and/or rock material which is brought to the site from off-site areas.

E. Select Material: On-site and/or imported material which is approved by ENGEO as a specific-purpose fill.

F. Engineered Fill: Fill upon which ENGEO has made sufficient observations and tests to confirm that the fill has been placed and compacted in accordance with specifications and requirements.

G. Degree of Compaction or Relative Compaction: The ratio, expressed as a percentage, of the in-place dry density of the fill and backfill material as compacted in the field to the maximum dry density of the same material as determined by ASTM D-1557 or California 216 compaction test method.

H. Optimum Moisture: Water content, percentage by dry weight, corresponding to the maximum dry density as determined by ASTM D-1557.

I. ENGEO: The project geotechnical engineering consulting firm, its employees or its designated representatives.

J. Drawings: All documents, approved for construction, which describe the Work.

1.05 OBSERVATION AND TESTING

A. All site preparation, cutting and shaping, excavating, filling, and backfilling shall be carried out under the observation of ENGEO, employed and paid for by the Owners. ENGEO will perform appropriate field and laboratory tests to evaluate the suitability of fill material, the proper moisture content for compaction, and the degree of compaction achieved. Any fill that does not meet the specification requirements shall be removed and/or reworked until the requirements are satisfied.

B. Cutting and shaping, excavating, conditioning, filling, and compacting procedures require approval of ENGEO as they are performed. Any work found unsatisfactory or any work disturbed by subsequent operations before approval is granted shall be corrected in an approved manner as recommended by ENGEO.

C. Tests for compaction will be made in accordance with test procedures outlined in ASTM D-1557, as applicable. Field testing of soils or compacted fill shall conform with the applicable requirements of ASTM D-2922.

D. All authorized observation and testing will be paid for by the Owners.

1.06 SITE CONDITIONS

A. Excavating, filling, backfilling, and grading work shall not be performed during unfavorable weather conditions. When the work is interrupted by rain, excavating, filling, backfilling, and grading work shall not be resumed until the site and soil conditions are suitable.

B. Contractor shall take the necessary measures to prevent erosion of freshly filled, backfilled, and graded areas until such time as permanent drainage and erosion control measures have been installed.

PART 2 - PRODUCTS

2.01 GENERAL

A. Contractor shall furnish all materials, tools, equipment, facilities, and services as required for performing the required excavating, filling, backfilling, and grading work, and trenching and backfilling for utilities.

2.02 SOIL MATERIALS

A. Fill

1. Material to be used for engineered fill and backfill shall be free from organic matter and other deleterious substances, and of such quality that it will compact thoroughly without excessive voids when watered and rolled. Excavated on-site material will be considered suitable for engineered fill and backfill if it contains no more than 3 percent organic matter, is free of debris and other deleterious substances and conforms to the requirements specified above. Rocks of maximum dimension in excess of two-thirds of the lift thickness shall be removed from any fill material to the satisfaction of ENGEO.

2. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled as required for later filling and backfilling operations. Conditioning shall consist of

spreading material in layers not to exceed 8 inches and raking free of debris and rubble. Rocks and aggregate exceeding the allowed largest dimension, and deleterious material shall be removed from the site and disposed off site in a legal manner.

3. ENGEO shall be immediately notified if potential hazardous materials or suspect soils exhibiting staining or odor are encountered. Work activities shall be discontinued within the area of potentially hazardous materials. ENGEO environmental personnel will conduct an assessment of the suspect hazardous material to determine the appropriate response and mitigation. Regulatory agencies may also be contacted to request concurrence and oversight. *ENGEO will rely on the Owner, or a designated Owner's representative, to make necessary notices to the appropriate regulatory agencies. The Owner may request ENGEO's assistance in notifying regulatory agencies, provided ENGEO receives Owner's written authorization to expand its scope of services.*

4. ENGEO shall be notified at least 48 hours prior to the start of filling and backfilling operations so that it may evaluate samples of the material intended for use as fill and backfill. All materials to be used for filling and backfilling require the approval of ENGEO.

B. Import Material: Where conditions require the importation of fill material, the material shall be an inert, nonexpansive soil or soil-rock material free of organic matter and meeting the following requirements unless otherwise approved by ENGEO.

Gradation (ASTM D-421):	Sieve Size	Percent Passing
	2-inch	100
	#200	15 - 70
Plasticity (ASTM D-4318):	Liquid Limit	Plasticity Index
	< 30	< 12
Swell Potential (ASTM D-4546B): (at optimum moisture)	Percent Heave	Swell Pressure
	< 2 percent	< 300 psf
Resistance Value (ASTM D-2844):	Minimum 25	
Organic Content (ASTM D-2974):	Less than 2 percent	

A sample of the proposed import material should be submitted to ENGEO for evaluation prior to delivery at the site.

2.03 SAND

A. Sand for sand cushion under slabs and for bedding of pipe in utility trenches shall be a clean and graded, washed sand, free from clay or organic material, suitable for the intended purpose with 90 to 100 percent passing a No. 4 U.S. Standard Sieve, not more than 5 percent passing a No. 200 U.S. Standard Sieve, and generally conforming to ASTM C33 for fine aggregate.

2.04 AGGREGATE DRAINAGE FILL

A. Aggregate drainage fill under concrete slabs and paving shall consist of broken stone, crushed or uncrushed gravel, clean quarry waste, or a combination thereof. The aggregate shall be free from fines, vegetable matter, loam, volcanic tuff, and other deleterious substances. It shall be of such quality that the absorption of water in a saturated surface dry condition does not exceed 3 percent of the oven dry weight of the samples.

B. Aggregate drainage fill shall be of such size that the percentage composition by dry weight as determined by laboratory sieves (U. S. Series) will conform to the following grading:

Sieve Size	Percentage Passing Sieve
1½-inches	100
1-inch	90 - 100
#4	0 - 5

2.05 SUBDRAINS

A. Perforated subdrain pipe of the required diameter shall be installed as shown on the drawings. The pipe(s) shall also conform to these specifications unless otherwise specified by ENGEO in the field.

Subdrain pipe shall be manufactured in accordance with one of the following requirements:

Design depths less than 30 feet

- Perforated ABS Solid Wall SDR 35 (ASTM D-2751)
- Perforated PVC Solid Wall SDR 35 (ASTM D-3034)
- Perforated PVC A-2000 (ASTM F949)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 50 psi minimum stiffness)

Design depths less than 50 feet

- Perforated PVC SDR 23.5 Solid Wall (ASTM D-3034)
- Perforated Sch. 40 PVC Solid Wall (ASTM-1785)
- Perforated ABS SDR 23.5 Solid Wall (ASTM D-2751)
- Perforated ABS DWV/Sch. 40 (ASTM D-2661 and D-1527)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 70 psi minimum stiffness)

Design depths less than 70 feet

- Perforated ABS Solid Wall SDR 15.3 (ASTM D-2751)
- Perforated Sch. 80 PVC (ASTM D-1785)
- Perforated Corrugated Aluminum (ASTM B-745)

B. Permeable Material (Class 2): Class 2 permeable material for filling trenches under, around, and over subdrains, behind building and retaining walls, and for pervious blankets shall consist of clean, coarse sand and gravel or crushed stone, conforming to the following grading requirements:

Sieve Size	Percentage Passing Sieve
1-inch	100
¾-inch	90 - 100
3/8-inch	40 - 100
#4	25 - 40
#8	18 - 33
#30	5 - 15
#50	0 - 7
#200	0 - 3

C. Filter Fabric: All filter fabric shall meet the following Minimum Average Roll Values unless otherwise specified by ENGEO.

Grab Strength (ASTM D-4632).....180 lbs
Mass Per Unit Area (ASTM D-4751).....6 oz/yd^2
Apparent Opening Size (ASTM D-4751).....70-100 U.S. Std. Sieve
Flow Rate (ASTM D-4491).....80 gal/min/ft^2
Puncture Strength (ASTM D-4833).....80 lbs

D. Vapor Retarder: Vapor Retarders shall consist of PVC, LDPE or HDPE impermeable sheeting at least 10 mils thick.

2.06 PERMEABLE MATERIAL (Class 1; Type A)

A. Class 1 permeable material to be used in conjunction with filter fabric for backfilling of subdrain excavations shall conform to the following grading requirements:

Sieve Size	Percentage Passing Sieve
¾-inch	100
½-inch	95 - 100
^{3}/8-inch	70 - 100
#4	0 - 55
#8	0 - 10
#200	0 - 3

PART 3 - EXECUTION

3.01 STAKING AND GRADES

A. Contractor shall lay out all his work, establish all necessary markers, bench marks, grading stakes, and other stakes as required to achieve design grades.

3.02 EXISTING UTILITIES

A. Contractor shall verify the location and depth (elevation) of all existing utilities and services before performing any excavation work.

3.03 EXCAVATION

A. Contractor shall perform excavating as indicated and required for concrete footings, drilled piers, foundations, floor slabs, concrete walks, and site leveling and grading, and provide shoring, bracing, underpinning, cribbing, pumping, and planking as

required. The bottoms of excavations shall be firm undisturbed earth, clean and free from loose material, debris, and foreign matter.

B. Excavations shall be kept free from water at all times. Adequate dewatering equipment shall be maintained at the site to handle emergency situations until concrete or backfill is placed.

C. Unauthorized excavations for footings shall be filled with concrete to required elevations, unless other methods of filling are authorized by ENGEO.

D. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled for later filling and backfilling operations as specified under Section 2.02, "Soil Materials."

E. Abandoned sewers, piping, and other utilities encountered during excavating shall be removed and the resulting excavations shall be backfilled with engineered fill as required by ENGEO.

F. Any active utility lines encountered shall be reported immediately to the Owner's Representative and authorities involved. The Owner and proper authorities shall be permitted free access to take the measures deemed necessary to repair, relocate, or remove the obstruction as determined by the responsible authority or Owner's Representative.

3.04 SUBGRADE PREPARATION

A. All brush and other rubbish, as well as trees and root systems not marked for saving, shall be removed from the site and legally disposed of.

B. Any existing structures, foundations, underground storage tanks, or debris must be removed from the site prior to any building, grading, or fill operations. Septic tanks, including all drain fields and other lines, if encountered, must be totally removed. The resulting depressions shall be properly prepared and filled to the satisfaction of ENGEO.

C. Vegetation and organic topsoil shall be removed from the surface upon which the fill is to be placed and either removed and legally disposed of or stockpiled for later use in approved landscape areas. The surface shall then be scarified to a depth of at least eight inches until the surface is free from ruts, hummocks, or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

D. After the foundation for the fill has been cleared and scarified, it shall be made uniform and free from large clods. The proper moisture content must be obtained by adding water or aerating. The foundation for the fill shall be compacted at the proper moisture content to a relative compaction as specified herein.

3.05 ENGINEERED FILL

A. Select Material: Fill material shall be "Select" or "Imported Material" as previously specified.

B. Placing and Compacting: Engineered fill shall be constructed by approved and accepted methods. Fill material shall be spread in uniform lifts not exceeding 8 inches in uncompacted thickness. Each layer shall be spread evenly, and thoroughly blade-mixed to obtain uniformity of material. Fill material which does not contain sufficient moisture as specified by ENGEO shall be sprinkled with water; if it contains excess moisture it shall be aerated or blended with drier material to achieve the proper water content. Select material and water shall then be thoroughly mixed before being compacted.

C. Unless otherwise specified in the Geotechnical Exploration report, each layer of spread select material shall be compacted to at least 90 percent relative compaction at a moisture content of at least three percent above the optimum moisture content. Minimum compaction in all keyways shall be a minimum of 95 percent with a minimum moisture content of at least 1 percentage point above optimum.

D. Unless otherwise specified in the Geotechnical Exploration report or otherwise required by the local authorities, the upper 6 inches of engineered fill in areas to receive pavement shall be compacted to at least 95 percent relative compaction with a minimum moisture content of at least 3 percentage points above optimum.

E. Testing and Observation of Fill: The work shall consist of field observation and testing to determine that each layer has been compacted to the required density and that the required moisture is being obtained. Any layer or portion of a layer that does not attain the compaction required shall be reworked until the required density is obtained.

F. Compaction: Compaction shall be by sheepsfoot rollers, multiple-wheel steel or pneumatic-tired rollers or other types of acceptable compaction equipment. Rollers shall be of such design that they will be able to compact the fill to the specified compaction. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer must be continuous so that the required compaction may be obtained uniformly throughout each layer.

G. Fill slopes shall be constructed by overfilling the design slopes and later cutting back the slopes to the design grades. No loose soil will be permitted on the faces of the finished slopes.

H. Strippings and topsoil shall be stockpiled as approved by Owner, then placed in accordance with ENGEO's recommendations to a minimum thickness of 6 inches and a maximum thickness of 12 inches over exposed open space cut slopes which are 3:1 or flatter, and track walked to the satisfaction of ENGEO.

I. Final Prepared Subgrade: Finish blading and smoothing shall be performed as necessary to produce the required density, with a uniform surface, smooth and true to grade.

3.06 BACKFILLING

A. Backfill shall not be placed against footings, building walls, or other structures until approved by ENGEO.

B. Backfill material shall be Select Material as specified for engineered fill.

C. Backfill shall be placed in 6-inch layers, leveled, rammed, and tamped in place. Each layer shall be compacted with suitable compaction equipment to 90 percent relative compaction at a moisture content of at least 3 percent above optimum.

3.07 TRENCHING AND BACKFILLING FOR UTILITIES

A. Trenching:

1. Trenching shall include the removal of material and obstructions, the installation and removal of sheeting and bracing and the control of water as necessary to provide the required utilities and services.

2. Trenches shall be excavated to the lines, grades, and dimensions indicated on the Drawings. Maximum allowable trench width shall be the outside diameter of the pipe plus 24 inches, inclusive of any trench bracing.

3. When the trench bottom is a soft or unstable material as determined by ENGEO, it shall be made firm and solid by removing said unstable material to a sufficient depth and replacing it with on-site material compacted to 90 percent minimum relative compaction.

4. Where water is encountered in the trench, the contractor must provide materials necessary to drain the water and stabilize the bed.

B. Backfilling:

1. Trenches must be backfilled within 2 days of excavation to minimize desiccation.

2. Bedding material shall be sand and shall not extend more than 6 inches above any utility lines.

3. Backfill material shall be select material.

4. Trenches shall be backfilled as indicated or required and compacted with suitable equipment to 90 percent minimum relative compaction at the required moisture content.

3.08 SUBDRAINS

A. Trenches for subdrain pipe shall be excavated to a minimum width equal to the outside diameter of the pipe plus at least 12 inches and to a depth of approximately 2 inches below the grade established for the invert of the pipe, or as indicated on the Drawings.

B. The space below the pipe invert shall be filled with a layer of Class 2 permeable material, upon which the pipe shall be laid with perforations down. Sections shall be joined as recommended by the pipe manufacturer.

C. Rocks, bricks, broken concrete, or other hard material shall not be used to give intermediate support to pipes. Large stones or other hard objects shall not be left in contact with the pipes.

D. Excavations for subdrains shall be filled as required to fill voids and prevent settlement without damaging the subdrain pipe. Alternatively, excavations for subdrains may be filled with Class 1 permeable material (as defined in Section 2.06) wrapped in Filter Fabric (as defined in Section 2.05).

3.09 AGGREGATE DRAINAGE FILL

A. ENGEO shall approve finished subgrades before aggregate drainage fill is installed.

B. Pipes, drains, conduits, and any other mechanical or electrical installations shall be in place before any aggregate drainage fill is placed. Backfill at walls to elevation of drainage fill shall be in place and compacted.

C. Aggregate drainage fill under slabs and concrete paving shall be the minimum uniform thickness after compaction of dimensions indicated on Drawings. Where not indicated, minimum thickness after compaction shall be 4 inches.

D. Aggregate drainage fill shall be rolled to form a well-compacted bed.

E. The finished aggregate drainage fill must be observed and approved by ENGEO before proceeding with any subsequent construction over the compacted base or fill.

3.10 SAND CUSHION

A. A sand cushion shall be placed over the vapor retarder membrane under concrete slabs on grade. Sand cushion shall be placed in uniform thickness as indicated on the Drawings. Where not indicated, the thickness shall be 2 inches.

3.11 FINISH GRADING

A. All areas must be finish graded to elevations and grades indicated on the Drawings. In areas to receive topsoil and landscape planting, finish grading shall be performed to a uniform 6 inches below the grades and elevations indicated on the Drawings, and brought to final grade with topsoil.

3.12 DISPOSAL OF WASTE MATERIALS

A. Excess earth materials and debris shall be removed from the site and disposed of in a legal manner. Location of dump site and length of haul are the Contractor's responsibility.

PART II - GEOGRID SOIL REINFORCEMENT

1. DESCRIPTION:

Work shall consist of furnishing geogrid soil reinforcement for use in construction of reinforced soil slopes and retention systems.

2. GEOGRID MATERIAL:

2.1 The specific geogrid material shall be preapproved by ENGEO.

2.2 The geogrid shall be a regular network of integrally connected polymer tensile elements with aperture geometry sufficient to permit significant mechanical interlock with the surrounding soil or rock. The geogrid structure shall be dimensionally stable and able to retain its geometry under construction stresses and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.

2.3 The geogrids shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated, as listed in Table I.

2.4 Certifications: The Contractor shall submit a manufacturer's certification that the geogrids supplied meet the respective index criteria set when geogrid was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply test data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the geogrid upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geogrid shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geogrid will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geogrid

damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

3.2 On-Site Representative: Geogrid material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Geogrid reinforcement may be joined with mechanical connections or overlaps as recommended and approved by the Manufacturer. Joints shall not be placed within 6 feet of the slope face, within 4 feet below top of slope, nor horizontally or vertically adjacent to another joint.

3.4 Geogrid Placement: The geogrid reinforcement shall be installed in accordance with the manufacturer's recommendations. The geogrid reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geogrid reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. However, if the Contractor is unable to complete a required length with a single continuous length of geogrid, a joint may be made with the Manufacturer's approval. Only one joint per length of geogrid shall be allowed. This joint shall be made for the full width of the strip by using a similar material with similar strength. Joints in geogrid reinforcement shall be pulled and held taut during fill placement.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geogrid reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geogrid reinforcement required for immediately pending work to prevent undue damage. After a layer of geogrid reinforcement has been placed, the next succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geogrid reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geogrid reinforcement and soil.

Geogrid reinforcement shall be placed to lay flat and pulled tight prior to backfilling. After a layer of geogrid reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geogrid reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geogrid reinforcement before at least six inches of soil have been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geogrid reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geosynthetic reinforcement at slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geogrid reinforcement shall be placed directly on the compacted horizontal fill surface. Geogrid reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geogrid reinforcement shall be verified by ENGEO.

Table I
Allowable Geogrid Strength With Various Soil Types
For Geosynthetic Reinforcement In
Mechanically Stabilized Earth Slopes

(Geogrid Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)

SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T_a (lb/ft)*		
	GEOGRID Type I	GEOGRID Type II	GEOGRID Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800

* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.

** Unified Soil Classifications.

PART III - GEOTEXTILE SOIL REINFORCEMENT

1. DESCRIPTION:

Work shall consist of furnishing geotextile soil reinforcement for use in construction of reinforced soil slopes.

2. GEOTEXTILE MATERIAL:

2.1 The specific geotextile material and supplier shall be preapproved by ENGEO.

2.2 The geotextile shall have a high tensile modulus and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.

2.3 The geotextiles shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated as listed in Table II.

2.4 Certification: The Contractor shall submit a manufacturer's certification that the geotextiles supplied meet the respective index criteria set when geotextile was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply the data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

3.1 Delivery, Storage and Handling: Contractor shall check the geotextile upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geotextile shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geotextile will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geotextile damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

3.2 On-Site Representative: Geotextile material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Geotextile Placement: The geotextile reinforcement shall be installed in accordance with the manufacturer's recommendations. The geotextile reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geotextile reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. Joints shall not be used with geotextiles.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geotextile reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geotextile reinforcement required for immediately pending work to prevent undue damage. After a layer of geotextile reinforcement has been placed, the succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geotextile reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geotextile reinforcement and soil.

Geosynthetic reinforcement shall be placed to lay flat and be pulled tight prior to backfilling. After a layer of geotextile reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geotextile reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geotextile reinforcement before at least six inches of soil has been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geotextile reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geotextile reinforcement as slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geotextile reinforcement shall be placed directly on the compacted horizontal fill surface. Geotextile reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geotextile reinforcement shall be verified by ENGEO.

Table II
Allowable Geotextile Strength
With Various Soil Types
For Geosynthetic Reinforcement In
Mechanically Stabilized Earth Slopes

(Geotextile Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)

SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T_a (lb/ft)*		
	GEOTEXTILE Type I	GEOTEXTILE Type II	GEOTEXTILE Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800

* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.

** Unified Soil Classifications.

PART IV - EROSION CONTROL MAT OR BLANKET

1. DESCRIPTION:

Work shall consist of furnishing and placing a synthetic erosion control mat and/or degradable erosion control blanket for slope face protection and lining of runoff channels.

2. EROSION CONTROL MATERIALS:

2.1 The specific erosion control material and supplier shall be pre-approved by ENGEO.

2.2 Certification: The Contractor shall submit a manufacturer's certification that the erosion mat/blanket supplied meets the criteria specified when the material was approved by ENGEO. The manufacturer's certification shall include a submittal package of documented test results that confirm the property values. In case of a dispute over validity of values, the Contractor will supply property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for conformance determinations.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the erosion control material upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the erosion mat shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the erosion mat/blanket shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed by cutting OUT a section of the mat. The remaining ends should be overlapped and secured with ground anchors. Any erosion mat/blanket damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.

3.2 On-Site Representative: Erosion control material suppliers shall provide a qualified and experienced representative on site, for a minimum of one day, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criteria will apply to construction of the initial slope only. The representative shall be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Placement: The erosion control material shall be placed and anchored on a smooth graded, firm surface approved by the Engineer. Anchoring terminal ends of the erosion control material shall be accomplished through use of key trenches. The material in the trenches shall be anchored to the soil on maximum 1½ foot centers. Topsoil, if required by construction drawings, placed over final grade prior to installation of the erosion control material shall be limited to a depth not exceeding 3 inches.

3.4 Erosion control material shall be anchored, overlapped, and otherwise constructed to ensure performance until vegetation is well established. Anchors shall be as designated on the construction drawings, with a minimum of 12 inches length, and shall be spaced as designated on the construction drawings, with a maximum spacing of 4 feet.

3.5 Soil Filling: If noted on the construction drawings, the erosion control mat shall be filled with a fine grained topsoil, as recommended by the manufacturer. Soil shall be lightly raked or brushed on/into the mat to fill the mat voids or to a maximum depth of 1 inch.

PART V - GEOSYNTHETIC DRAINAGE COMPOSITE

1. DESCRIPTION:

Work shall consist of furnishing and placing a geosynthetic drainage system as a subsurface drainage medium for reinforced soil slopes.

2. DRAINAGE COMPOSITE MATERIALS:

2.1 The specific drainage composite material and supplier shall be preapproved by ENGEO.

2.2 The drain shall be of composite construction consisting of a supporting structure or drainage core material surrounded by a geotextile. The geotextile shall encapsulate the drainage core and prevent random soil intrusion into the drainage structure. The drainage core material shall consist of a three dimensional polymeric material with a structure that permits flow along the core laterally. The core structure shall also be constructed to permit flow regardless of the water inlet surface. The drainage core shall provide support to the geotextile. The fabric shall meet the minimum property requirements for filter fabric listed in Section 2.05C of the Guide Earthwork Specifications.

2.3 A geotextile flap shall be provided along all drainage core edges. This flap shall be of sufficient width for sealing the geotextile to the adjacent drainage structure edge to prevent soil intrusion into the structure during and after installation. The geotextile shall cover the full length of the core.

2.4 The geocomposite core shall be furnished with an approved method of constructing and connecting with outlet pipes or weepholes as shown on the plans. Any fittings shall allow entry of water from the core but prevent intrusion of backfill material into the core material.

2.5 Certification and Acceptance: The Contractor shall submit a manufacturer's certification that the geosynthetic drainage composite meets the design properties and respective index criteria measured in full accordance with all test methods and standards specified. The manufacturer's certification shall include a submittal package of documented test results that confirm the design values. In case of dispute over validity of design values, the Contractor will supply design property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for determining conformance.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the geosynthetic drainage composite upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geosynthetic drainage composite shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regards to protection from direct sunlight must also be followed. At the time of installation, the geosynthetic drainage composite shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed or repaired. Any geosynthetic drainage composite damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.

3.2 On-Site Representative: Geosynthetic drainage composite material suppliers shall provide a qualified and experienced representative on site, for a minimum of one half day, to assist the Contractor and ENGEO personnel at the start of construction with directions on the use of drainage composite. If there is more than one application on a project, this criterion will apply to construction of the initial application only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining applications.

3.3 Placement: The soil surface against which the geosynthetic drainage composite is to be placed shall be free of debris and inordinate irregularities that will prevent intimate contact between the soil surface and the drain.

3.4 Seams: Edge seams shall be formed by utilizing the flap of the geotextile extending from the geocomposite's edge and lapping over the top of the fabric of the adjacent course. The fabric flap shall be securely fastened to the adjacent fabric by means of plastic tape or non-water-soluble construction adhesive, as recommended by the supplier. Where vertical splices are necessary at the end of a geocomposite roll or panel, an 8-inch-wide continuous strip of geotextile may be placed, centering over the seam and continuously fastened on both sides with plastic tape or non-water-soluble construction adhesive. As an alternative, rolls of geocomposite drain material may be joined together by turning back the fabric at the roll edges and interlocking the cuspidations approximately 2 inches. For overlapping in this manner, the fabric shall be lapped and tightly taped beyond the seam with tape or adhesive. Interlocking of the core shall always be made with the upstream edge on top in the direction of water flow. To prevent soil intrusion, all exposed edges of the geocomposite drainage core edge must be covered. Alternatively, a 12-inch-wide strip of fabric may be utilized in the same manner, fastening it to the exposed fabric 8 inches in from the edge and folding the remaining flap over the core edge.

3.5 Soil Fill Placement: Structural backfill shall be placed immediately over the geocomposite drain. Care shall be taken during the backfill operation not to damage the geotextile surface of the drain. Care shall also be taken to avoid excessive settlement of the backfill material. The geocomposite drain, once installed, shall not be exposed for more than seven days prior to backfilling.

APPENDIX F
PHASE I ENVIRONMENTAL ASSESSMENT

LUSH GEOSCIENCES
INCORPORATED
GEOLOGICAL AND ENVIRONMENTAL SERVICES

REPORT
PHASE I ENVIRONMENTAL ASSESSMENT
ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD AND ROSE STREET
SACRAMENTO, CALIFORNIA

PREPARED FOR

Marco Gabbiani

Job No. 2602-2
January 16, 2020

Andrew P. Lush

PG 4421
Exp. 10/2020

LUSH
GEOSCIENCES, INC.

3706 SOLOMON ISLAND ROAD ● WEST SACRAMENTO, CA 95691 ● (916)878-7851 ● LUSHGEO@MSN.COM

LUSH GEOSCIENCES
I N C O R P O R A T E D
GEOLOGICAL AND ENVIRONMENTAL SERVICES

January 16, 2020
2602-2

CERTIFICATION

This Assessment was prepared by Andrew Lush, President and Chief Geologist of Lush Geosciences, Inc. I am a California-registered Professional Geologist with more than 30 years of experience as a practicing geologist and environmental professional.

I, Andrew Lush, declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 C.F.R. Part 312. Further, I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Based on the information collected during this investigation, subsurface soil and groundwater contamination of the site likely to result in required mitigation by past, present or future Site owners is unlikely. We conclude that the risk of contamination at the site is so minimal that no further investigation is warranted.

Please call our office if you have any questions regarding this report.

Sincerely,

LUSH GEOSCIENCES, INC.

Andrew P. Lush
President
PG 4421

3706 SOLOMON ISLAND ROAD ● WEST SACRAMENTO, CA 95691 ● (916)878-7851 ● LUSHGEO@MSN.COM

LUSH GEOSCIENCES
I N C O R P O R A T E D
GEOLOGICAL AND ENVIRONMENTAL SERVICES

January 16, 2020
2602-2

Marco Gabbiani
2406 Buena Vista Avenue
Belmont, CA 94002

Subject: Executive Summary, Phase I Environmental Assessment
Robla Village Property
Rio Linda Boulevard and Rose Street, Sacramento, California

Dear Mr. Gabbiani:

At your request, Lush Geosciences, Inc. performed this Phase I Environmental Assessment of the property located between Rio Linda Boulevard and Rose Street in northern Sacramento, California (Site). The Site includes 5 parcels; all are vacant. The purpose of this assessment was to provide you with information regarding the likelihood that hazardous materials contamination may exist on or in the vicinity of the Site.

Our assessment included: 1) examination of records pertaining to the Site and its vicinity at offices of Sacramento County and the State of California; 2) historical research, including review of aerial photographs and historical maps; 3) review of materials provided by the Site owners and interviews with owners of adjacent properties and with regulatory personnel familiar with the Site and its vicinity; and 4) reconnaissance of the Site and its immediate vicinity.

File and historical review was performed using Environmental Data Resources (EDR, 2020) searches of historical maps, historical air photos and telephone directories, and agency files. These materials were supplemented with our own research and verification of EDR reports using similar sources or using access to files not provided by EDR.

The Site is located on the east side of Rio Linda Boulevard and east of Rose Street in northern Sacramento. The Site is subdivided into 5 parcels. All parcels are currently vacant; Parcel 1 (5240 Rio Linda) at the south end of the Site covers 1.38 acres, Parcel 4 (5330 Rio Linda) occupies 0.17 acre, Parcel 8 (no address) covers 5.89 acres, Parcel 9 (5240 Rio Linda) covers 0.47 acres, and Parcel 11 (no address) occupies 13.42 acres for a total of 28.33 acres.

The Site is roughly triangular in shape. The Site is vacant grassy land, there are areas of un-engineered fill near the south end of the Site and near the northeast corner, and concrete rubble is present in small piles near the south end of the Site and in the northeast corner. Drainage ditches transect the Site from west to east across the central part of the Site and across the southern portion.

No transformers were observed onsite. No stains or other evidence of leakage were observed. There are no utilities supplied to the Site at present.

No Hazardous Materials Business Plan (HMBP) materials were on file at Sacramento County, indicating that the Site occupants did not store hazardous materials or generate hazardous waste in reportable quantities during times when such were required. No visible evidence (fill pipes, vent pipes, dispensers, surface patches) which would indicate the past or current presence of USTs was discovered or reported during the Site reconnaissance.

The Site is bounded on the west by the northwest-trending Rio Linda Boulevard and on the north by a levee and drainage channel. The east side of the site is adjoined by a former railroad right-of-way which runs north south and is occupied by a bike/running path. Rose Street adjoins the right-of-way next o the southern part of the Site; and vacant land is east of the northern part of the Site. Residences are east of Rose Street east of the central part of the Site and a school and administration building is east of the south end of Rose Street.

Sources of historical data include topographic maps from the US Geological Survey (1891, 1892, 1893, 1902, 1911, 1950, 1951, 1954, 1967, 1975, 1980, 1992, 2012), aerial photographs (1937, 1947, 1957, 1964, 1966, 1972, 1984, 1993, 1998, 2006, 2009, 2012, 2016, 2018), and City Directories (1961, 1966, 1970, 1975, 1980, 1982, 1991, 1995, 1999, 2005, 2010, 2014) of the Site vicinity were reviewed to evaluate the recent past uses of the Site. Sanborn Maps were also consulted (no coverage of the Site). Our research indicates the following:

Year	Source Type	Comments
1891	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1892	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.

1893	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1902	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1911	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1937	Aerial Photo	Rio Linda Boulevard present, Rose Street present. Structures present near the center of the northern portion of the Site and near the northeast corner, surroundings are vacant except for rural residences east of the Site and farther to the southeast, residence west of the southern part of the Site.
1947	Aerial Photo	Rio Linda Boulevard present, Rose Street present. Structures present near the center of the northern portion of the Site and near the northeast corner, residence near the south end, surroundings are vacant except for rural residences east of the Site.
1950	Topographic Map	Rio Linda Boulevard present, Rose Street present. Structures present near the center of the northern portion of the Site and near the northeast corner, residences near the south end, surroundings are vacant except for rural residences east and west of the southern and northern portions of the Site.
1951	Topographic Map	As above.
1954	Topographic Map	As above.
1957	Aerial Photo	Three residences in the southern portion of the Site.
1964	Aerial Photo	As above.
1966	Aerial Photo	As above.
1967	Topographic Map	As above.
1972	Aerial Photo	As above, apparent grading in the western portion of the central part of the Site.
1975	Topographic Map	As above.
1980	Topographic Map	As above.
1984	Aerial Photo	As above.
1993	Aerial Photo	As above, residences cleared from southern portion of the Site.
1998	Aerial Photo	As above.
2006	Aerial Photo	As above.
2009	Aerial Photo	As above.
2012	Aerial Photo	Site, vicinity in present configuration.
2016	Aerial Photo	Site and vicinity in present configuration.

2018	Aerial Photo	Site and vicinity in present configuration.

The Site has been essentially vacant with no significant construction after 1993. Buildings were formerly near the northeast corner ad residences were present in the southern portion of the Site. Fill and concrete rubble onsite were probably generated by onsite construction and residential demolition.

A review of data available from various regulatory agencies indicated that minimal hazardous materials are stored for use and retail sale in the vicinity of the site. The Site is not listed by RCRA as a Small-Quantity Generator of hazardous wastes; it is not listed with Sacramento County as a waste generator or hazmat handler.

CERCLIS

CERCLIS shows no "Superfund" site within 1 mi; no other CERCLIS "Superfund" sites, no Delisted "Superfund" Sites, and no Cleanup site are within 1 mi of the Site. No NFRAP sites are within 1 mi. None are likely to impact the subject property.

CalSites shows two additional sites within 1 mi. No State “Superfund” sites are within 1 mi. No CalSites Evaluation Site was listed within 1 mi; none are likely to impact the Site. Two School sites were listed, Norwood Junior High is 0.8 mi to the southwest and Gateway Community Charter School is 0.9 mi to the south. No action was required at either site. No Voluntary Cleanup Sites are within 1 mi.

No Indian Lands are within 1 mi of the Site. No federal or State Institutional/Engineering Controls or environmental liens are applicable to the Site.

The subject property is not listed as a RCRIS Small-Quantity Generator. No sites within a 0.25-mi radius of the property were listed as RCRIS Small-Quantity Generators; no facilities within 1 mi are Large-Quantity Generators. No sites were listed as Transporters. No Treatment, Storage or Disposal facility for hazardous wastes was listed within 1 mi.

There are no listed landfill and no composting/transfer site within 1 mi of the Site.

No SLIC site is within 0.5 mi. None are likely to impact the Site. .

One site within 0.5 mi are listed as a LUST site, the Robla administration building is to the east of the southern portion of the Site (closed, no contamination remaining.).

No incident within approximately 0.1 mi of the Site appeared on the Emergency Response Notification System.

CONCLUSIONS

A Recognized Environmental Condition (REC) is the presence or likely presence of any hazardous substances or petroleum products on or at a property due to any release to the environment, under conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment. A Historical REC (HREC) is a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority without subjecting the property to any required controls. A Controlled REC (CREC) is an REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. RECs do not include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

Our Site reconnaissance revealed no distressed vegetation. No indication of underground tanks and no indications of significant soil contamination were found. According to data available from regulatory agencies, there are no records of underground tanks and gasoline contamination on the Site.

Based on the information collected during this investigation, significant subsurface soil contamination of the Site by past Site activities is unlikely. Groundwater contamination is unlikely. Some potential for unknown Site contamination exists because of potentially contaminated sites unknown to regulatory agencies and not apparent through reconnaissance and historical research. This possibility is considered very unlikely.

We therefore recommend no additional work to assess possible contamination onsite.

Please call our office if you have any questions regarding this report.

Sincerely,

LUSH GEOSCIENCES, INC.

Andrew P. Lush
President
PG 4421
Exp. 10/18

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 SCOPE OF WORK 2

3.0 SITE IDENTIFICATION 2

3.1 LOCATION 2
3.2 SITE DESCRIPTION 2
3.3 ADJACENT PROPERTIES 3

4.0 HISTORICAL LAND USE 4

5.0 ENVIRONMENTAL SETTING 6

5.1 PHYSIOGRAPHY 6
5.2 SOIL CONDITIONS 6
5.3 GROUNDWATER 6

6.0 AGENCY REVIEW 7

6.1 UNDERGROUND STORAGE TANKS 7
6.2 HAZARDOUS MATERIALS 7
6.3 RCRIS 7
6.4 CONTAMINATED SITES - CERCLIS 7
6.5 CONTAMINATED SITES - CALSITES 8
6.6 LUST SITES 8
6.7 SLIC SITES 8
6.8 INDIAN LANDS 8
6.9 INSTITUTIONAL/ENGINEERING CONTROLS 8
6.10 ENVIRONMENTAL LIENS 8
6.11 ERNS SITES 8
6.12 CONTAMINATED SITES – PROPOSITION 65 9
6.13 LANDFILLS 9

7.0 CONCLUSIONS 10

8.0 DATA GAPS 11

9.0 LIMITATIONS 11

10.0 REFERENCES 12

LIST OF FIGURES

FIGURE 1 SITE LOCATION MAP
FIGURE 2 GENERALIZED SITE PLAN
FIGURE 3 ASSESSORS PARCEL MAP
FIGURE 4 TOPOGRAPHIC MAP OF SITE IN 1891
FIGURE 5 TOPOGRAPHIC MAP OF SITE IN 1893
FIGURE 6 TOPOGRAPHIC MAP OF SITE IN 1902
FIGURE 7 TOPOGRAPHIC MAP OF SITE IN 2011
FIGURE 8 AERIAL PHOTOGRAPH OF SITE IN 1937
FIGURE 9 AERIAL PHOTOGRAPH OF SITE IN 1947
FIGURE 10 TOPOGRAPHIC MAP OF SITE IN 1950
FIGURE 11 TOPOGRAPHIC MAP OF SITE IN 1951
FIGURE 12 TOPOGRAPHIC MAP OFSITE IN 1954
FIGURE 13 AERIAL PHOTOGRAPH OF SITE IN 1957
FIGURE 14 AERIAL PHOTOGRAPH OF SITE IN 1964
FIGURE 15 AERIAL PHOTOGRAPH OF SITE IN 1966
FIGURE 16 TOPOGRAPHIC MAP OF SITE IN 1967
FIGURE 17 AERIAL PHOTOGRAPH OF SITE IN 1972
FIGURE 18 TOPOGRAPHIC MAP OF SITE IN 1975
FIGURE 19 TOPOGRAPHIC MAP OF SITE IN 1980
FIGURE 20 AERIAL PHOTOGRAPH OF SITE IN 1984
FIGURE 21 AERIAL PHOTOGRAPH OF SITE IN 1993
FIGURE 22 AERIAL PHOTOGRAPH OF SITE IN 1998
FIGURE 23 AERIAL PHOTOGRAPH OF SITE IN 2006
FIGURE 24 AERIAL PHOTOGRAPH OF SITE IN 2009
FIGURE 25 AERIAL PHOTOGRAPH OF SITE IN 2012
FIGURE 25 TOPOGRAPHIC MAP OF SITE IN 2012
FIGURE 27 AERIAL PHOTOGRAPH OF SITE IN 2016
FIGURE 28 AERIAL PHOTOGRAPH OF SITE IN 2018

APPENDICES

APPENDIX A SITE PHOTOGRAPHS

APPENDIX B EDR REPORTS

B-1 – EDR RADIUS SUMMARY REPORT

B-2 – EDR RADIUS REPORT

B-3 – EDR AERIAL PHOTO REPORT

B-4 – EDR SANBORN MAP REPORT

B-5 – EDR TOPOGRAPHIC MAP REPORT

B-6 – EDR DIRECTORY REPORT

APPENDIX B GEOTECHNICAL REPORT

1.0 INTRODUCTION

At the request of MNS Management LLC, Lush Geosciences, Inc. conducted this Phase I Environmental Assessment of the property located between Rio Linda Boulevard and Rose Street in northern Sacramento, California (Site). The Site includes five parcels; each of which is vacant (Figures 1, 2). The purpose of this assessment was to provide Next Generation Capital with information regarding the likelihood that hazardous materials contamination may exist on or in the vicinity of the Site. A Recognized Environmental Condition (REC) is the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. RECs do not include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

Our assessment included: 1) examination of records pertaining to the Site and its vicinity at offices of Sacramento County, the City of Sacramento, and the State of California; 2) historical research including a review of aerial photographs and historic maps; 3) and interviews with and review of materials provided by owner of the Site, occupants of adjacent properties and with regulatory persons familiar with the Site and its immediate vicinity; and 4) a reconnaissance of the Site and its immediate vicinity.

This Assessment meets guidelines set forth in ASTM Standard 1527-05 for Environmental Assessments. Information regarding hazardous materials contamination on or near the project Site was obtained from the following agencies:

- California State Environmental Protection Agency (Cal EPA) Department of Toxic Substances Control, and U.S. Environmental Protection Agency (EPA) information on file at Cal EPA;
- California Environmental Protection Agency (Cal EPA), Office of Environmental Information;
- California State Department of Water Resources (DWR);
- The Central Valley Region of the California Regional Water Quality Control Board (CRWQCB);
- California Integrated Waste Management Board (CIWMB), and

- Sacramento County Environmental Management Department (SCEMD).

2.0 SCOPE OF WORK

The scope of work for this assessment was to provide information regarding the past use of the Site and its immediate vicinity to assist in evaluating the feasibility of its purchase. The assessment objectives were to evaluate whether there is evidence of soil or groundwater contamination beneath the Site from storage, use, or disposal of hazardous or potentially hazardous materials present on or in the immediate vicinity of the Site.

3.0 SITE IDENTIFICATION

The Site is in the City of Sacramento, Sacramento County, and appears in Sacramento County Assessors Map Book 226 on Page 6, block 062, as Parcels 4, 8, 9, and 11 and in Book 226, page10, Block 102, as Parcel 1. The Site is owned by Abdelkarim A Shehadeh.

3.1 Location

The Site appears on the U.S.G.S. topographic map of the Sacramento area in Section 10 of the Rancho Del Paso (Figure 1, 3).

3.2 Site Description

The Site is located on the east side of Rio Linda Boulevard and east of Rose Street in northern Sacramento. The Site is subdivided into 5 parcels. All parcels are currently vacant; Parcel 1 (5240 Rio Linda) at the south end of the Site covers 1.38 acres, Parcel 4 (5330 Rio Linda) occupies 0.17 acre, Parcel 8 (no address) covers 5.89 acres, Parcel 9 (5240 Rio Linda) covers 0.47 acres, and Parcel 11 (no address) occupies 13.42 acres for a total of 28.33 acres.

Photographs of the Site and vicinity are presented in Appendix A. A geotechnical report is attached as Appendix C.

The Site is roughly triangular in shape. The Site is vacant grassy land, there are areas of un-engineered fill near the south end of the Site and near the northeast corner, and concrete rubble is present in small piles near the south end of the Site and in the northeast corner. Drainage ditches transect the Site from west to east across the central part of the Site and across the southern portion.

No transformers were observed onsite. No stains or other evidence of leakage were observed. There are no utilities supplied to the Site at present.

No Hazardous Materials Business Plan (HMBP) materials were on file at Sacramento County, indicating that the Site occupants did not store hazardous materials or generate hazardous waste in reportable quantities during times when such were required. No visible evidence (fill pipes, vent pipes, dispensers, surface patches) which would indicate the past or current presence of USTs was discovered or reported during the Site reconnaissance.

3.3 Adjacent Properties

The Site is bounded on the west by the northwest-trending Rio Linda Boulevard and on the north by a levee and drainage channel. The east side of the site is adjoined by a former railroad right-of-way which runs north south and is occupied by a bike/running path. Rose Street adjoins the right-of-way next o the southern part of the Site; and vacant land is east of the northern part of the Site. Residences are east of Rose Street east of the central part of the Site and a school and administration building is east of the south end of Rose Street.

4.0 HISTORICAL LAND USE

Sources of historical data include topographic maps from the US Geological Survey (1891, 1892, 1893, 1902, 1911, 1950, 1951, 1954, 1967, 1975, 1980, 1992, 2012), aerial photographs (1937, 1947, 1957, 1964, 1966, 1972, 1984, 1993, 1998, 2006, 2009, 2012, 2016, 2018), and City Directories (1961, 1966, 1970, 1975, 1980, 1982, 1991, 1995, 1999, 2005, 2010, 2014) of the Site vicinity were reviewed to evaluate the recent past uses of the Site. Sanborn Maps were also consulted (no coverage of the Site). Our research indicates the following:

Year	Source Type	Comments
1891	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1892	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1893	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1902	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1911	Topographic Map	Rio Linda Boulevard present, Site and vicinity appear vacant.
1937	Aerial Photo	Rio Linda Boulevard present, Rose Street present. Structures present near the center of the northern portion of the Site and near the northeast corner, surroundings are vacant except for rural residences east of the Site and farther to the southeast, residence west of the southern part of the Site.
1947	Aerial Photo	Rio Linda Boulevard present, Rose Street present. Structures present near the center of the northern portion of the Site and near the northeast corner, residence near the south end, surroundings are vacant except for rural residences east of the Site.
1950	Topographic Map	Rio Linda Boulevard present, Rose Street present. Structures present near the center of the northern portion of the Site and near the northeast corner, residences near the south end, surroundings are vacant except for rural residences east and west of the southern and northern portions of the Site.
1951	Topographic Map	As above.
1954	Topographic Map	As above.
1957	Aerial Photo	Three residences in the southern portion of the Site.

1964	Aerial Photo	As above.
1966	Aerial Photo	As above.
1967	Topographic Map	As above.
1972	Aerial Photo	As above, apparent grading in the western portion of the central part of the Site..
1975	Topographic Map	As above.
1980	Topographic Map	As above.
1984	Aerial Photo	As above.
1993	Aerial Photo	As above, residences cleared from southern portion of the Site.
1998	Aerial Photo	As above.
2006	Aerial Photo	As above.
2009	Aerial Photo	As above.
2012	Aerial Photo	Site, vicinity in present configuration.
2016	Aerial Photo	Site and vicinity in present configuration.
2018	Aerial Photo	Site and vicinity in present configuration.

The Site has been essentially vacant with no significant construction after 1993. Buildings were formerly near the northeast corner ad residences were present in the southern portion of the Site. Fill and concrete rubble onsite were probably generated by onsite construction and residential demolition.

5.0 ENVIRONMENTAL SETTING

Surface drainage at the site is controlled by the onsite drainage ditches, which direct overland flow to the county's network of storm drains and sewers.

5.1 Physiography

The Site is located near the southern end of the Sacramento Valley, which is the northern half of the Great Valley Physiographic Province. The elevation at the Site is approximately 40 ft above mean sea level. The topography of the Site is flat. The semi-arid local climate is characterized by mild to cool, wet winters and hot, dry summers with approximately 14 ins of annual precipitation.

5.2 Soil Conditions

Native soil is not exposed at the Site; native soil below the building is mapped as Madera Loam with minor other soil types loam (USDA, 2020). The soils are developed on a Quaternary Riverbank deposits (Wagner et al., 1981).

5.3 Groundwater

The Site is located within the Sacramento River Hydrologic Basin, as defined by the State of California Department of Water Resources (DWR). Groundwater surface elevation maps from DWR (1986) and the Sacramento County Department of Public Works (1987), indicate that the elevation of uppermost groundwater beneath the Site was approximately 20 ft below mean sea level, or approximately 50 ft below the existing ground surface with a flow direction that is generally to the north.

6.0 AGENCY REVIEW

File and historical review was performed using Environmental Data Resources (EDR, 2019) searches of historical maps, historical air photos and telephone directories, and agency files. These materials were supplemented with our own research and verification of EDR reports using similar sources or using access to files not provided by EDR.

A computer-generated agency file search is presented as Appendix B1-B6.

6.1 Underground Storage Tanks

According to Sacramento County, there are no registered active underground storage tanks present within 0.1 mi of the Site. The Site is not listed as having had present or former USTs.

6.2 Hazardous Materials

A review of data available from various regulatory agencies indicated that minimal hazardous materials are stored for use and retail sale in the vicinity of the site (Appendix B). No listed incident of contamination has occurred at the subject property; The Site is not listed by RCRA as a Small-Quantity Generator of hazardous wastes; it is not listed with Sacramento County as a waste generator or hazmat handler.

6.3 RCRIS

The subject property is not listed as a RCRIS Small-Quantity Generator. No sites within a 0.25-mi radius of the property were listed as RCRIS Small-Quantity Generators; no facilities within 1 mi are Large-Quantity Generators. No sites were listed as Transporters.

No Treatment, Storage, or Disposal site is listed within 1 mi.

No CORRACTS site is listed within 1 mi.

6.4 Contaminated Sites - CERCLIS

CERCLIS shows no "Superfund" site within 1 mi; no other CERCLIS "Superfund" sites, no Delisted "Superfund" Sites, and no Cleanup site are within 1 mi of the Site. No NFRAP sites are within 1 mi. None are likely to impact the subject property.

6.5 Contaminated Sites - CalSites

CalSites shows two additional sites within 1 mi. No State "Superfund" sites are within 1 mi. No CalSites Evaluation Site was listed within 1 mi; none are likely to impact the Site. Two School sites were listed, Norwood Junior High is 0.8 mi to the southwest and Gateway Community Charter school is 0.9 mi to the south. No action was required at either site. No Voluntary Cleanup Sites are within 1 mi.

6.6 LUST Sites

One site within 0.5 mi are listed as a LUST site, the Robla administration building is to the east of the southern portion of the Site (closed, no contamination remaining.).

6.7 SLIC Sites

No SLIC site is within 0.5 mi. None are likely to impact the Site.

6.8 Indian Lands

No Indian Lands are within 1 mi of the Site.

6.9 Institutional/Engineering Controls

No federal or State Institutional/Engineering Controls or environmental liens are applicable to the Site.

6.10 Environmental Liens

Environmental liens are a charge, security, or encumbrance on a property's title to secure payment of cost or debt arising from response actions, cleanup, or other remediation of hazardous substances or petroleum products. We have reviewed title documents and found no evidence of such liens; further, our review of Site history and regulatory files showed no evidence of past or present response actions, cleanup, or other remediation onsite or on nearby properties which would have resulted in such a lien for the subject property.

6.11 ERNS Sites

No incidents within approximately 0.25 mi of the Site appeared on the Emergency Response Notification System.

6.12 Contaminated Sites – Proposition 65

No incidents within approximately 0.25 mi of the Site appeared on the Sacramento County list of Proposition 65 reports.

6.13 Landfills

There are no listed landfills and no composting/transfer sites within 1 mi of the Site.

7.0 CONCLUSIONS

A Recognized Environmental Condition (REC) is the presence or likely presence of any hazardous substances or petroleum products on or at a property due to any release to the environment, under conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment. A Historical REC (HREC) is a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority without subjecting the property to any required controls. A Controlled REC (CREC) is an REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. RECs do not include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

No RECs were found during this investigation. We found no USTs or areas of heavy staining or distressed vegetation indicative of subsurface contamination, nor did we find indications of contamination in agency files. According to data available from regulatory agencies, there is no known record of unknown underground tanks or hazardous materials contamination on the Site.

Based on the information collected during this investigation, significant subsurface soil and groundwater contamination of the Site by Site activities is unlikely. Contamination from offsite locations is unlikely. This opinion is based on our understanding of the present and historical use of the site, on the nature and distribution of contaminants at known contaminated sites, on our interpretation of subsurface soil units, and on the inferred northerly groundwater flow direction. Some potential for unknown Site contamination exists because of potentially contaminated sites unknown to regulatory agencies and not apparent through reconnaissance and historical research. Should a higher degree of certainty regarding this conclusion be required, the possibility of contamination can be evaluated more definitely by drilling borings and collecting and chemically analyzing soil and/or groundwater samples. These procedures, however, are unlikely to result in the discovery of significant contamination. We therefore do not recommend further work to assess possible contamination.

8.0 DATA GAPS

AAI standards require interviews with past and present owners, operators, and occupants of the subject property. During our assessment we spoke with current operators/occupants of the Site and information was provided by the Site owner. We were unable to contact former owners. This may be viewed as a Data Gap. Based on the information collected during our historical research, our review of reasonably obtainable data from regulatory files, and on information collected during our Site inspection, on information provided by the current occupants and owner, and communications with Site and regulatory personnel, we remain confident in our conclusion that no conditions are known to exist or to have existed which would have resulted in the release of pollutants, contaminants, petroleum and petroleum products or controlled substances to the ground or groundwater on, at, in, or to the subject property which would require remediation; this data gap does not prevent us from reaching this conclusion.

9.0 LIMITATIONS

The above conclusions are based on our assessment of conditions indicated to exist as of the date of our field reconnaissance (January 2020). Our assessment included a brief field reconnaissance, a review of the referenced public documents and materials provided by the client, and interviews with the Site owner and/or occupants and other persons thought to be familiar with the Site and its near vicinity, and state or local regulatory persons familiar with the area. This assessment was conducted in accordance with generally accepted standards of environmental geological practice at the time it was performed.

The results of this assessment do not preclude the possibility that substances that are currently or which in the future may be defined as hazardous may be present on the property because of activities that we could not identify or in locations which were not sampled. Further investigation, including subsurface exploration and laboratory testing of soil and groundwater samples can reduce the uncertainties inherent in this type of limited environmental assessment. These investigations are unlikely to discover contamination and we therefore do not recommend further work to assess possible contamination

No soil engineering or geotechnical references are made nor should they be inferred. This report is applicable only to the investigated property and should not be used for any other property.

10.0 REFERENCES

California Environmental Protection Agency, 2020, Envirostor List, Toxic Substances Control Division, Sacramento, California, January 2020.

California Environmental Protection Agency, 2020, Geotracker List, CRWQCB, Sacramento, California, January 2020.

California Integrated Waste Management Board, 2020, Sacramento County Landfills, (Solid Waste Information System (online)) Sacramento, California January 2020.

Environmental Data Resources, 2020a, Radius Search, January 2020.

Environmental Data Resources, 2020c, Aerial Photo Decade Package, January 2020, contains images from USDA/NAIP 2006, 2009, 2012, 2016, USDA 1937, 1957, 1964, 1972, 1984, 1993, USGS 1947, 1966, 1998.

Environmental Data Resources, 2020d, EDR-City Directory Image Search, January 2020, contains images referenced therein from 1961, 1965, 1966, 1970, 1975, 1980, 1982, 1991, 1995, 1999, 2005, 2010, 2014.

Environmental Data Resources, 2020b, Historical Topo Map Search, January 2020, contains USGS Topographic Maps 1891, 1892, 1893, 1902, 1911, 1950, 1951, 1954, 1967, 1975, 1980, 1992, 2012.

Google Earth, 2018, Aerial Photo, 2018, obtained on-line.

Sacramento County Assessor's parcel maps and building permits, available online January 2020.

Sanborn Maps, from EDR (None available)

United States Department of Agriculture Soil Conservation Service, Online, Soil Survey of Sacramento County, California.

United States Environmental Protection Agency, 2019, RCRIS – TSD Site List, January 2020.

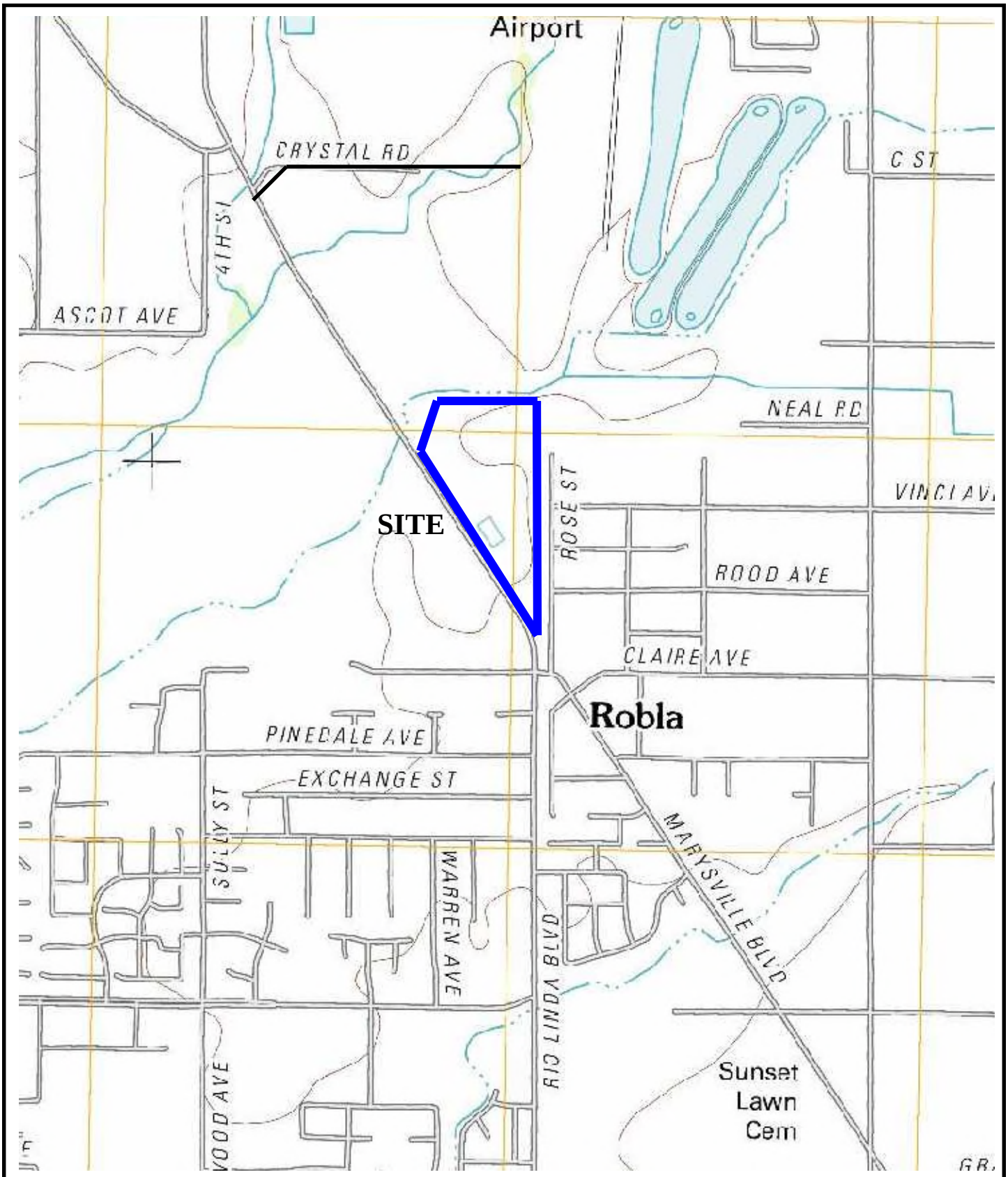
United States Environmental Protection Agency, 2020, RCRIS – CORRACTS – Handlers with Corrective Actions List, January 2020.

United States Environmental Protection Agency, 2020, RCRIS – Generators List, January 2020.

United States Environmental Protection Agency, 2020, CERCLIS, List-8: Site/Event Listing, US EPA Region 9, San Francisco, California, January 2020.

United States Environmental Protection Agency, 2020, National Priorities List, Final and Proposed Sites by Region, US EPA Region 9, San Francisco, California, January 2020.

Wagner, D.L., C.W. Jennings, T.L. Bedrossian, and E.J. Bortugno, 1981, Regional Geologic Map Series, Sacramento Quadrangle, Map No. 1A (Geology), California Division of Mines and Geology.



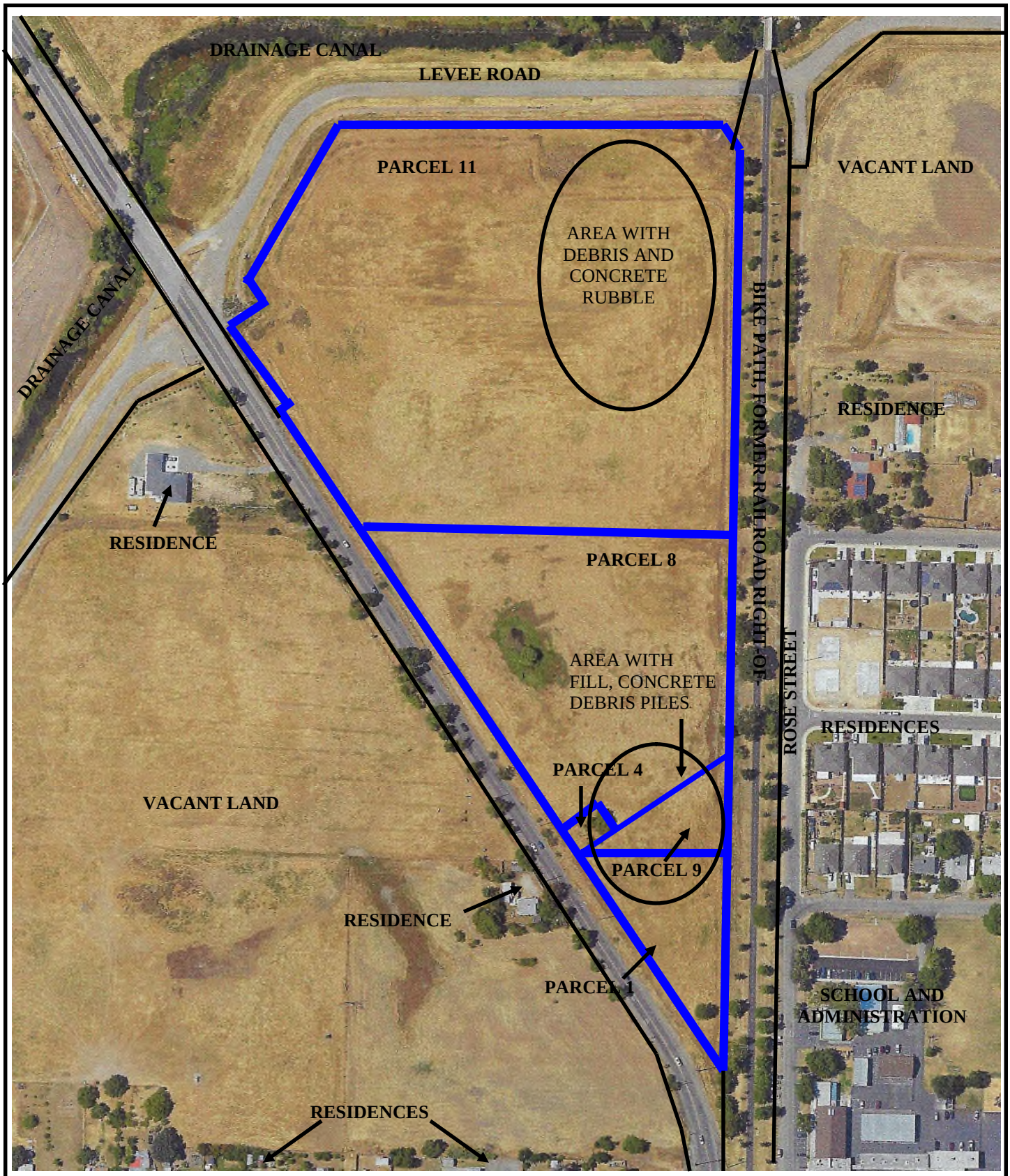
North

USGS, 2012

SITE LOCATION MAP
ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 1



North

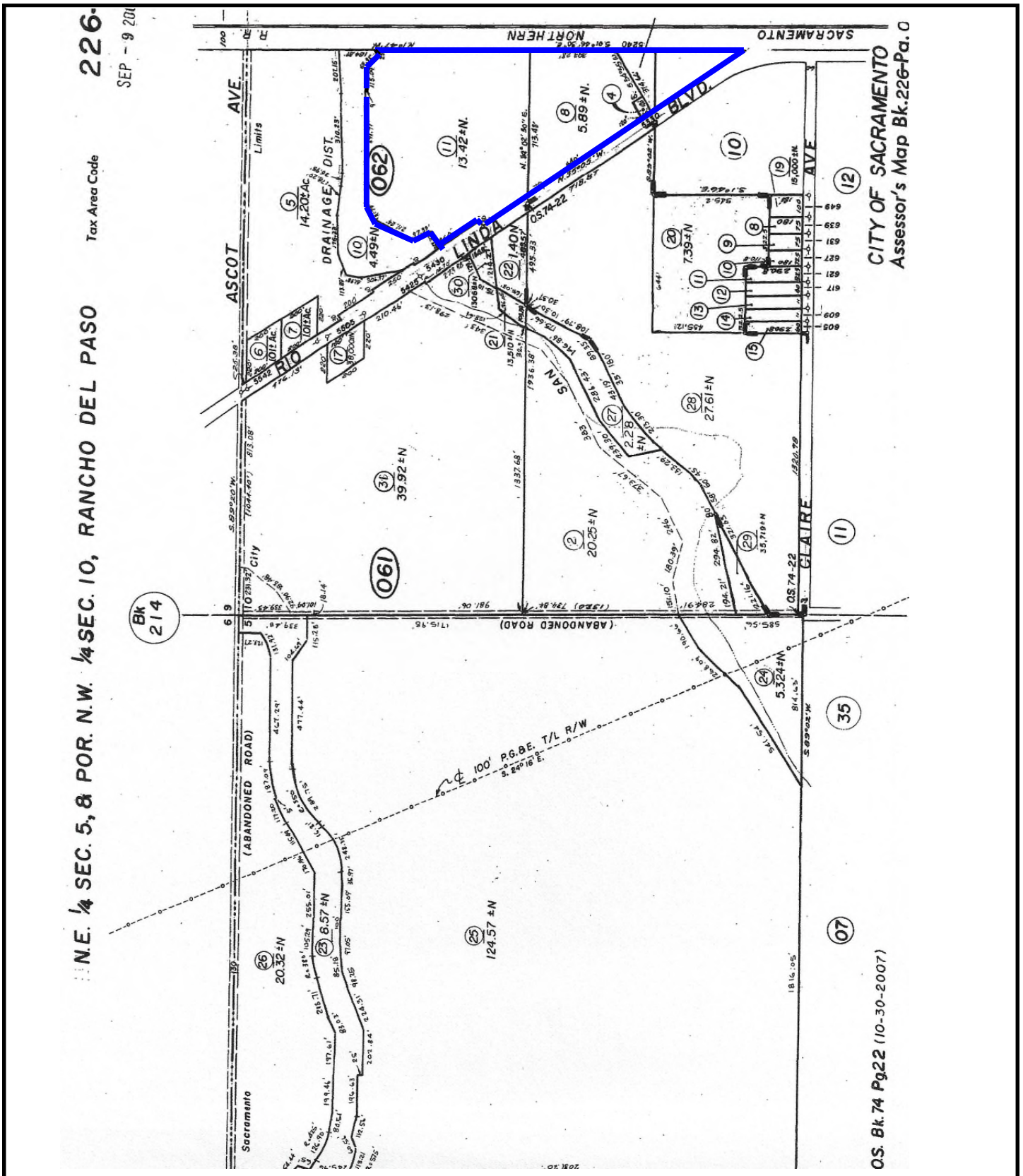
Google Earth 2018

GENERALIZED SITE PLAN

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 2



North

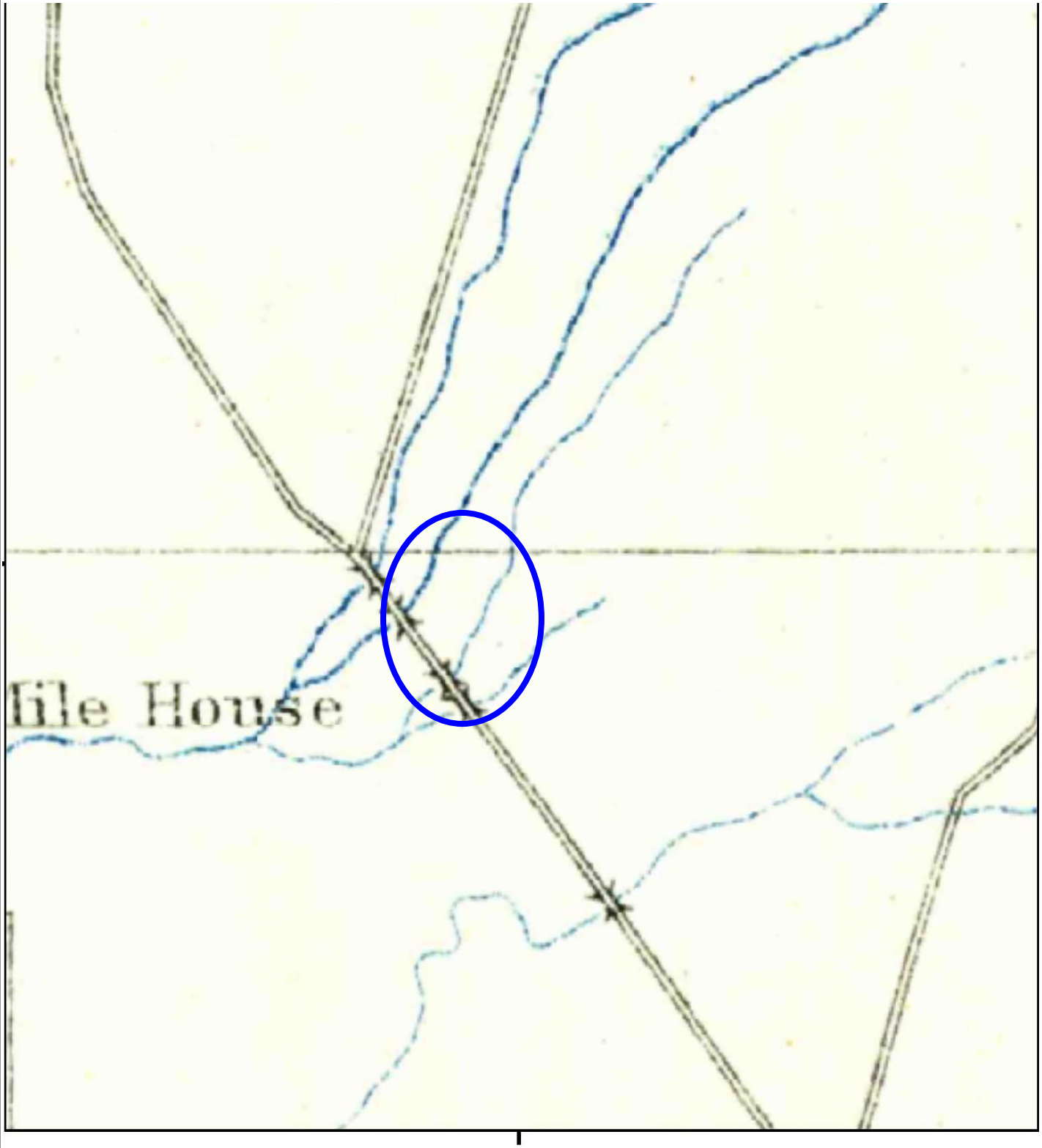
Sacramento Assessor, 2020

ASSESSORS PARCEL MAP

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 3



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

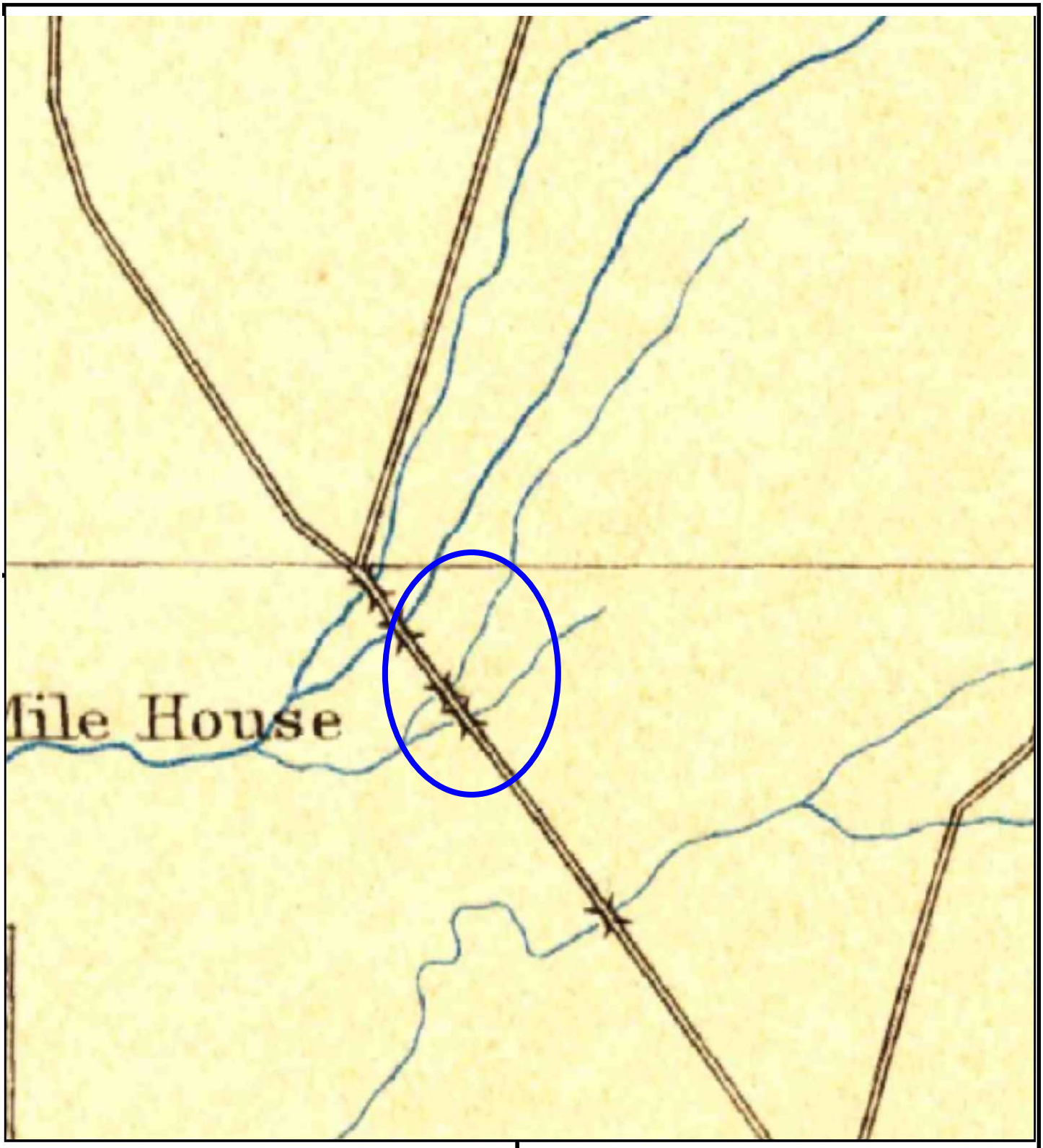
USGS 1891

TOPOGRAPHIC MAP OF SITE IN 1891

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 4



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

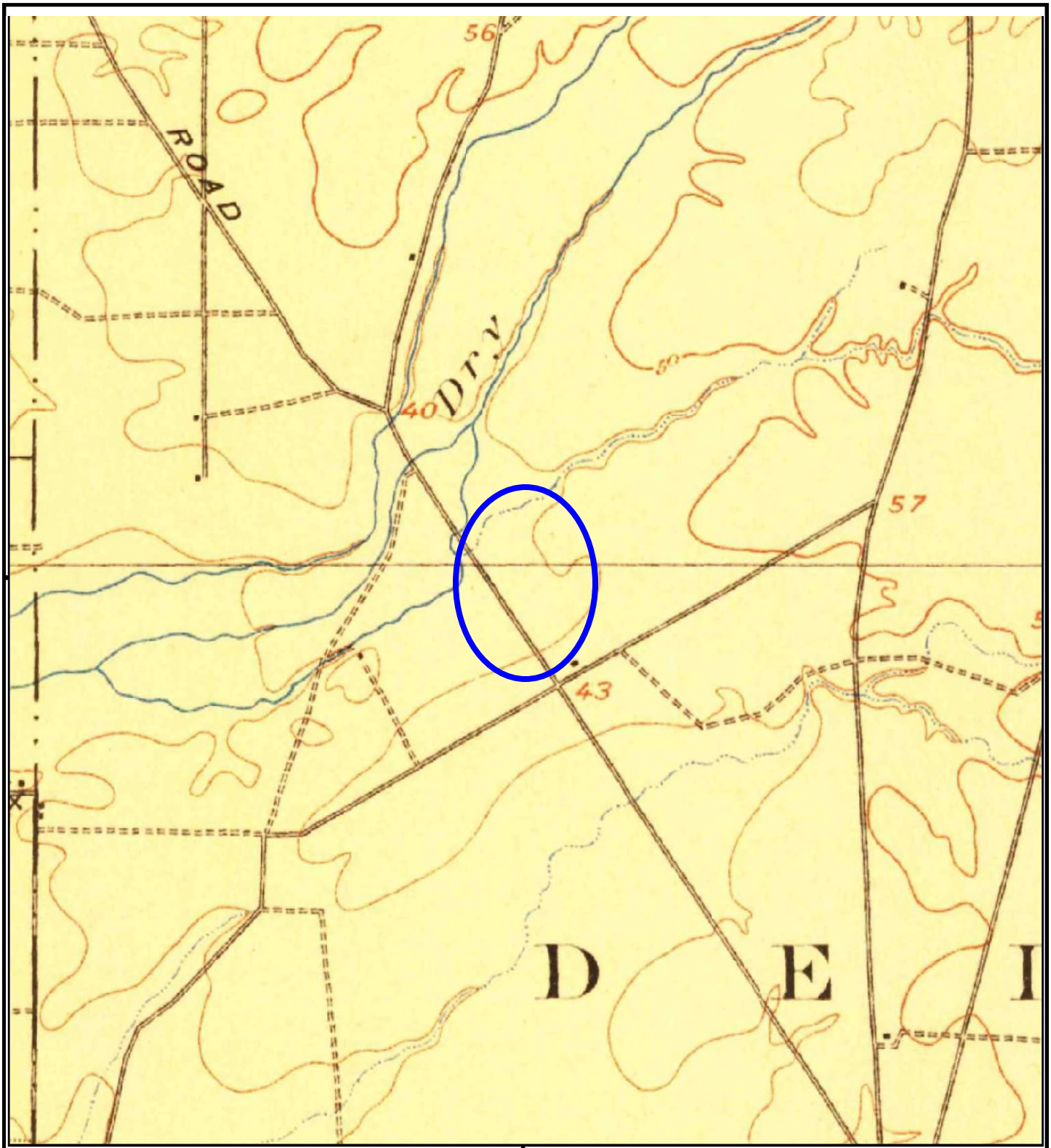
USGS 1893

TOPOGRAPHIC MAP OF SITE IN 1893

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 5



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

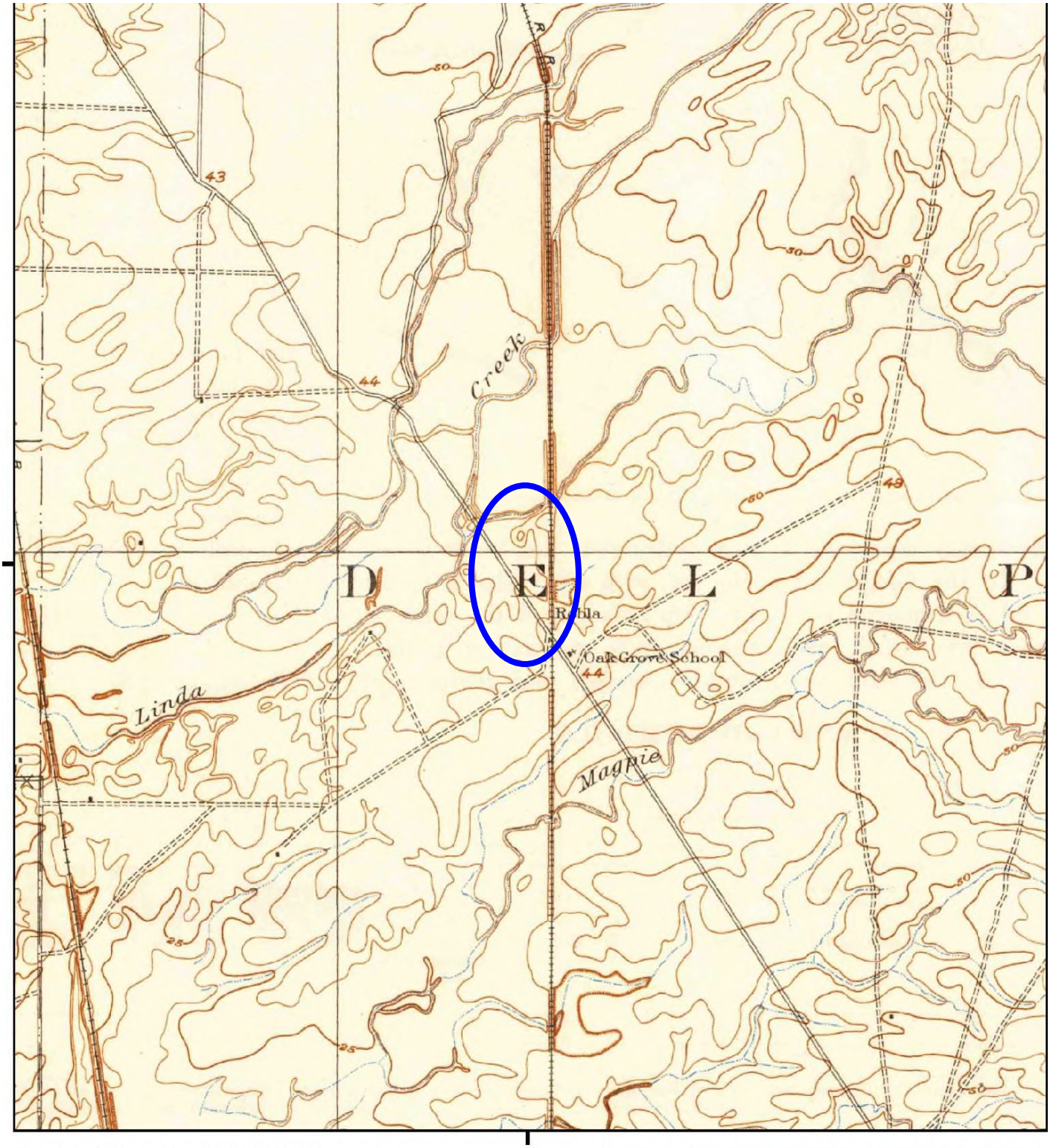
USGS 1902

TOPOGRAPHIC MAP OF SITE IN 1902

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 6



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

USGS 1911

TOPOGRAPHIC MAP OF SITE IN 1911

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 7

North

EDR 1937

AERIAL PHOTO OF SITE IN 1937

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 8

North

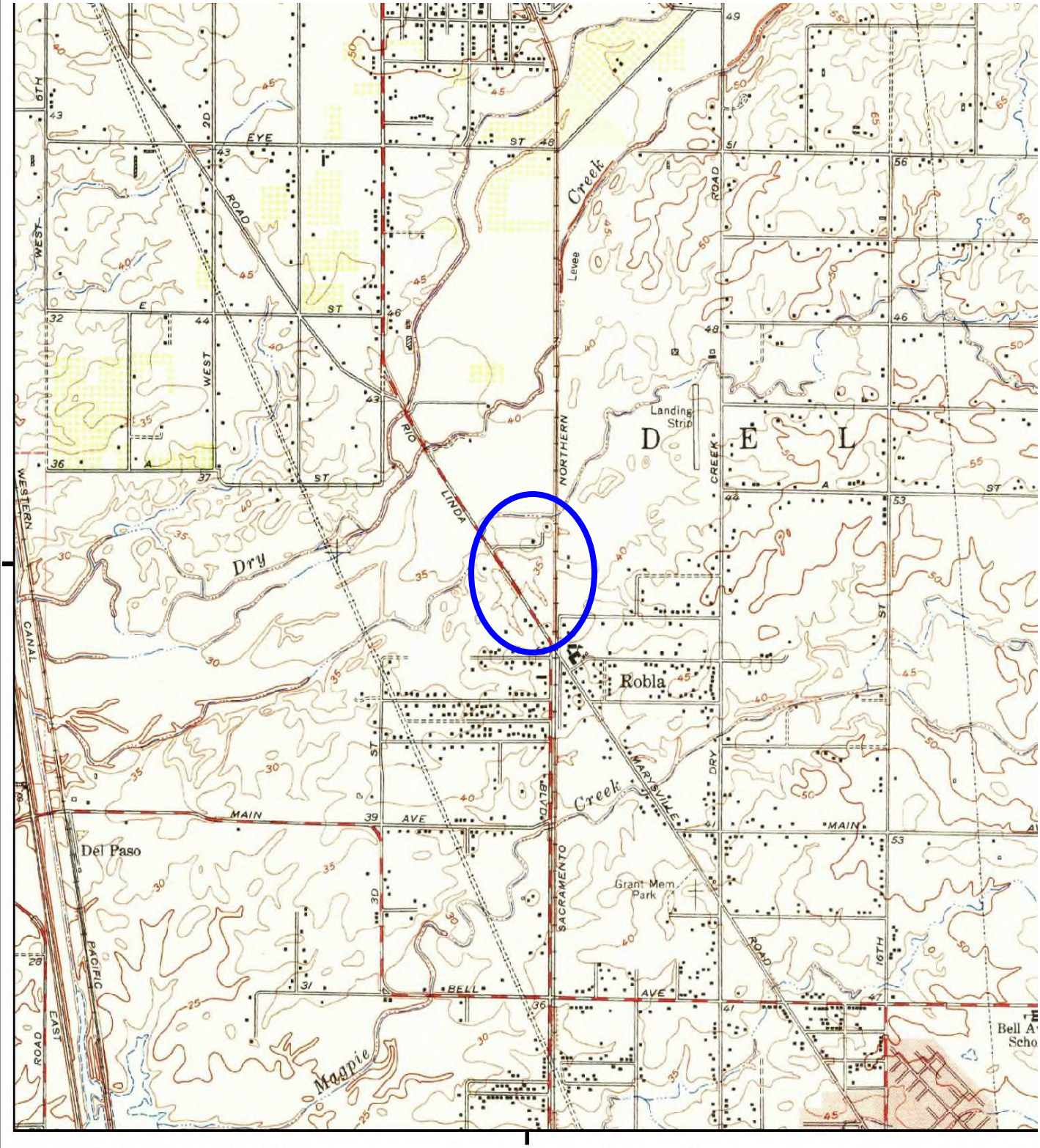
EDR 1947

AERIAL PHOTO OF SITE IN 1947

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 9



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

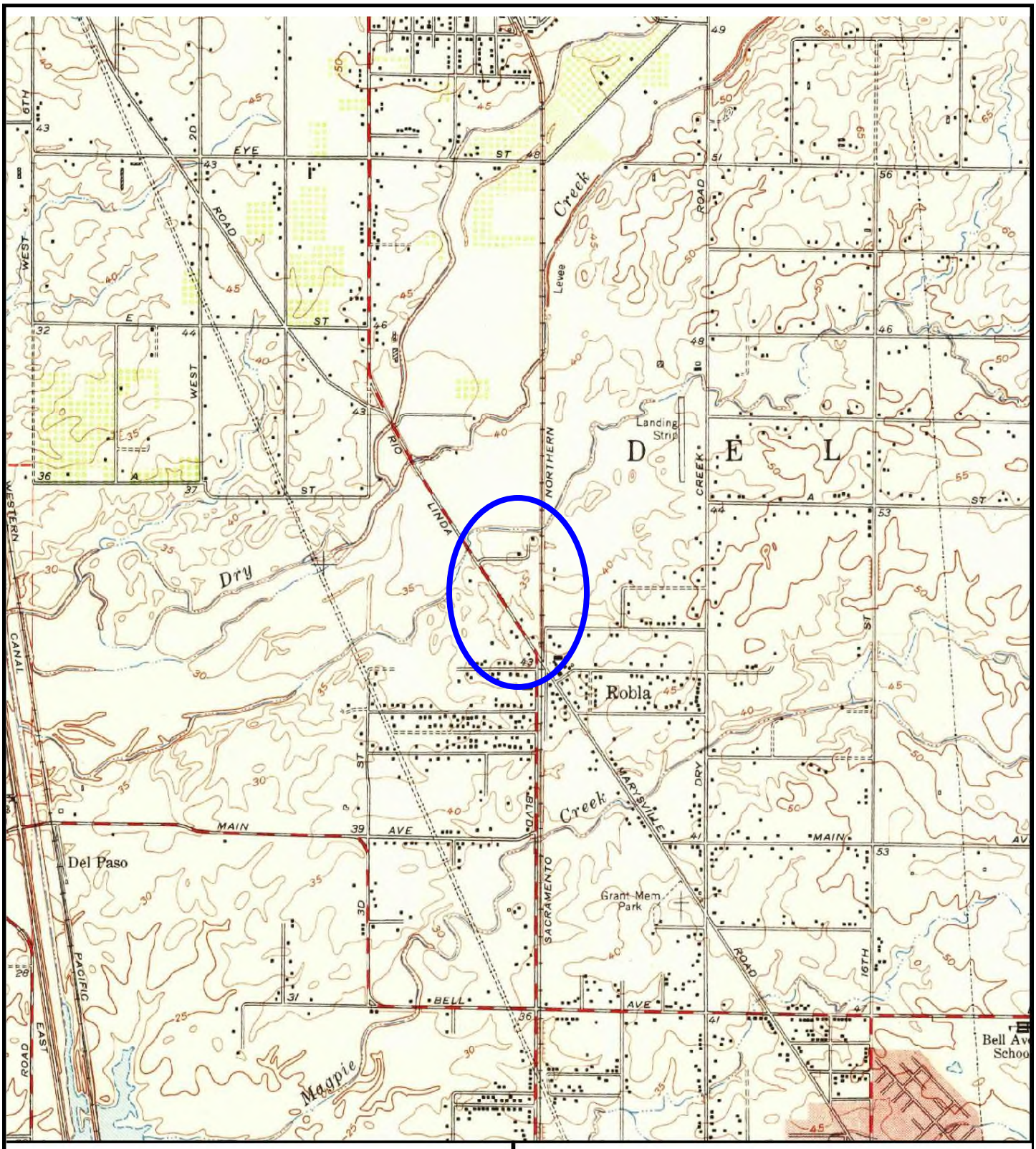
USGS 1950

TOPOGRAPHIC MAP OF SITE IN 1950

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 10



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

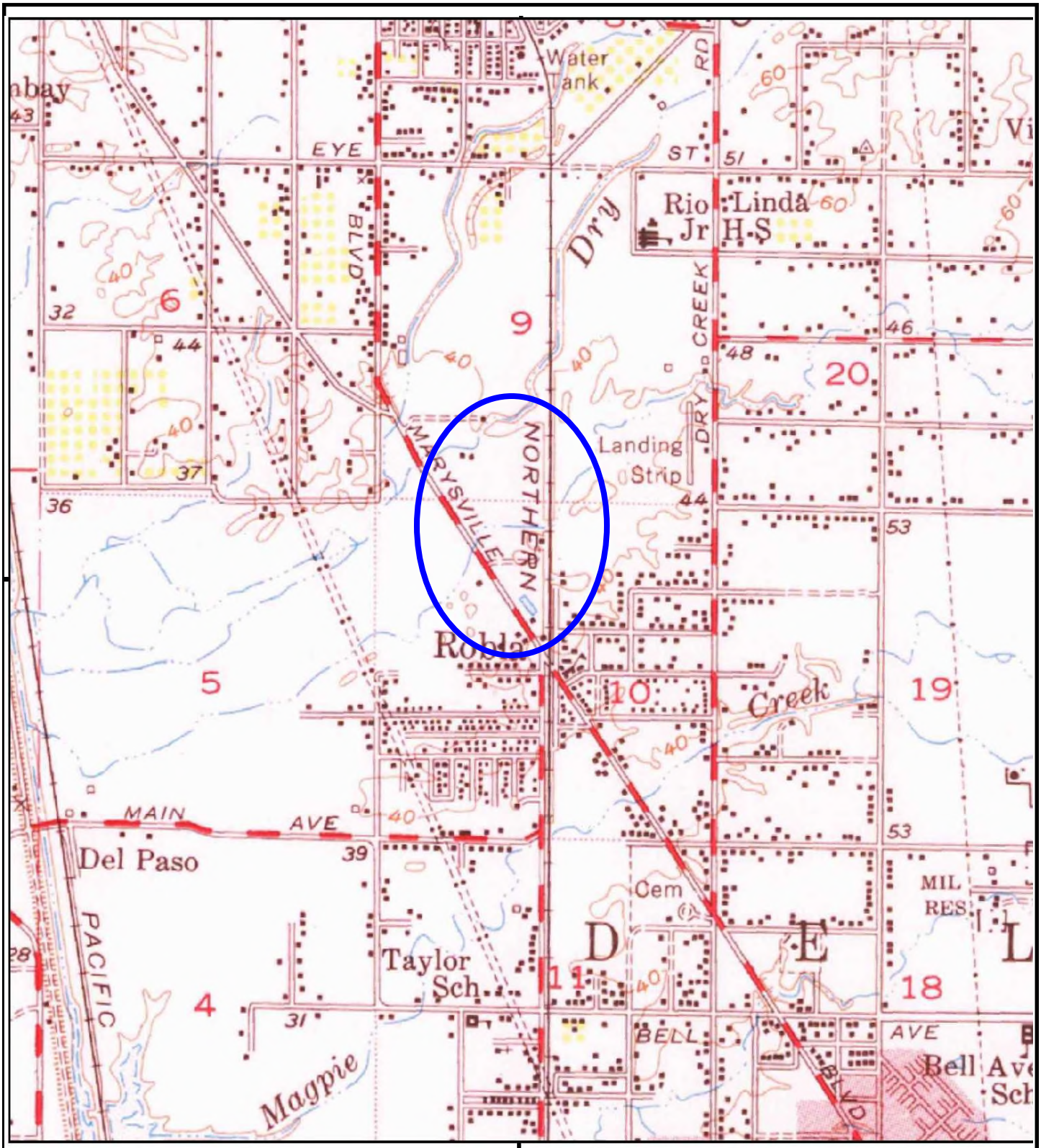
USGS 1951

TOPOGRAPHIC MAP OF SITE IN 1951

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 11



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

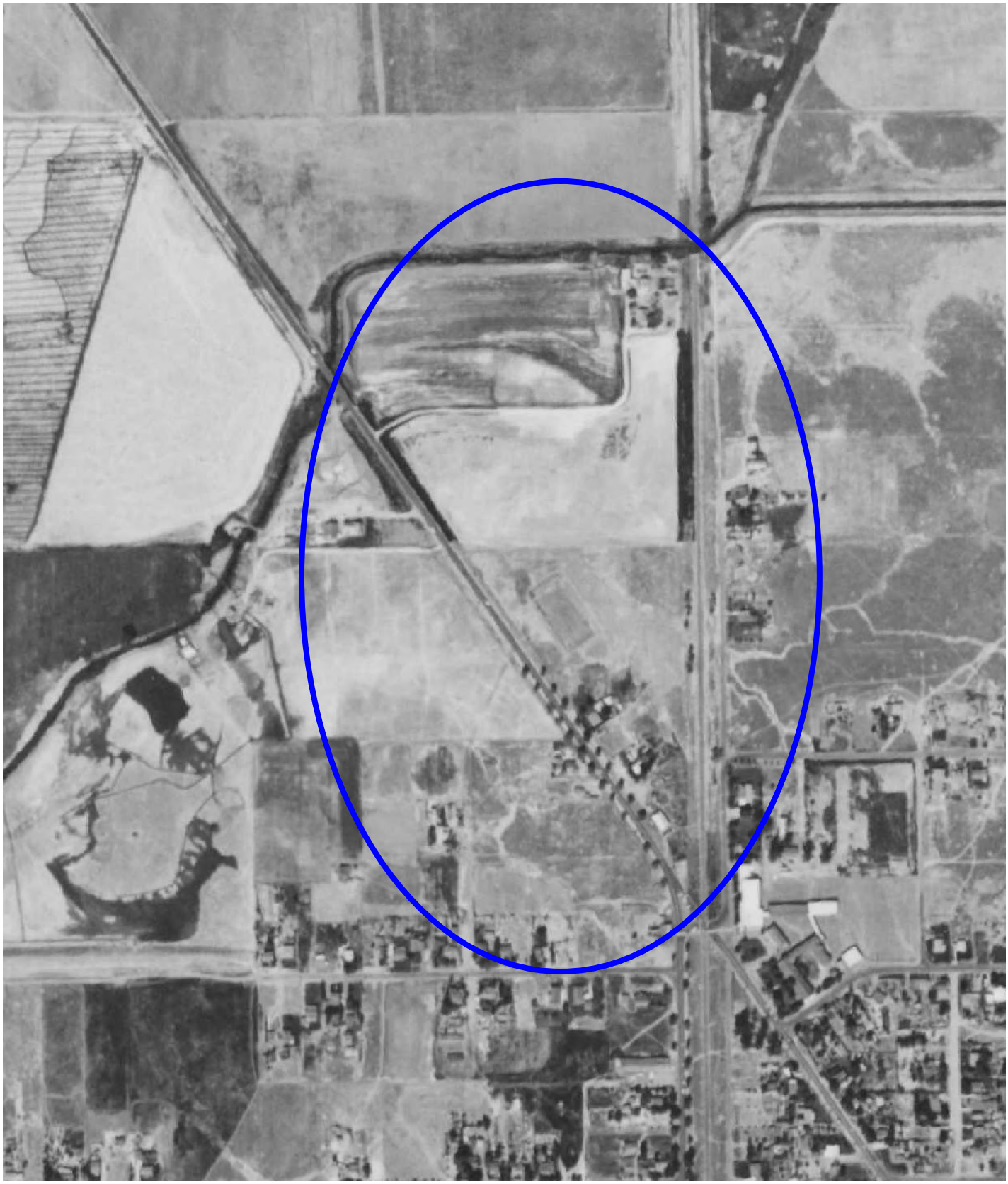
USGS 1954

TOPOGRAPHIC MAP OF SITE IN 1954

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 12



North

EDR 1957

AERIAL PHOTO OF SITE IN 1957

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 13

North

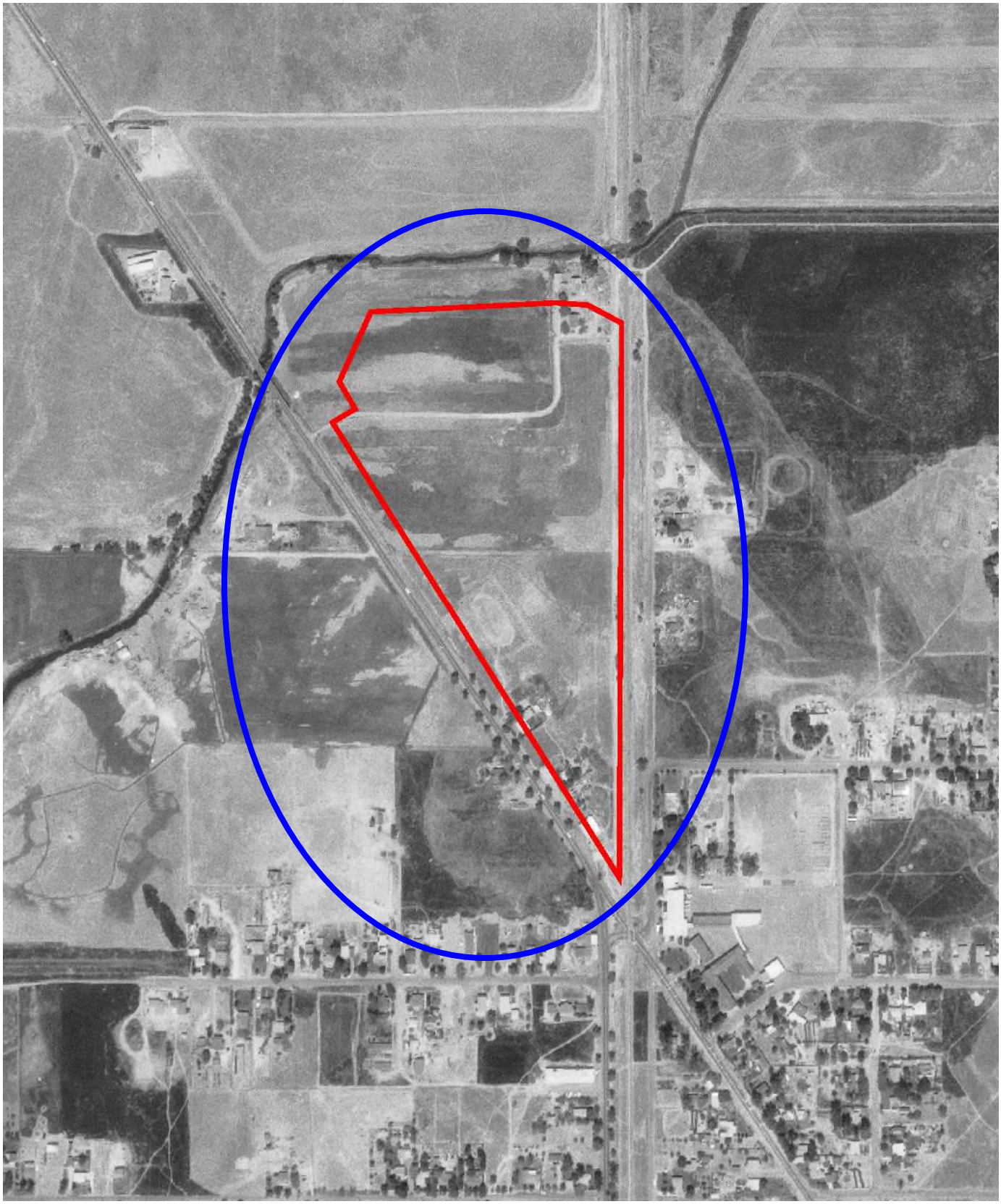
EDR 1964

AERIAL PHOTO OF SITE IN 1964

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 14



North

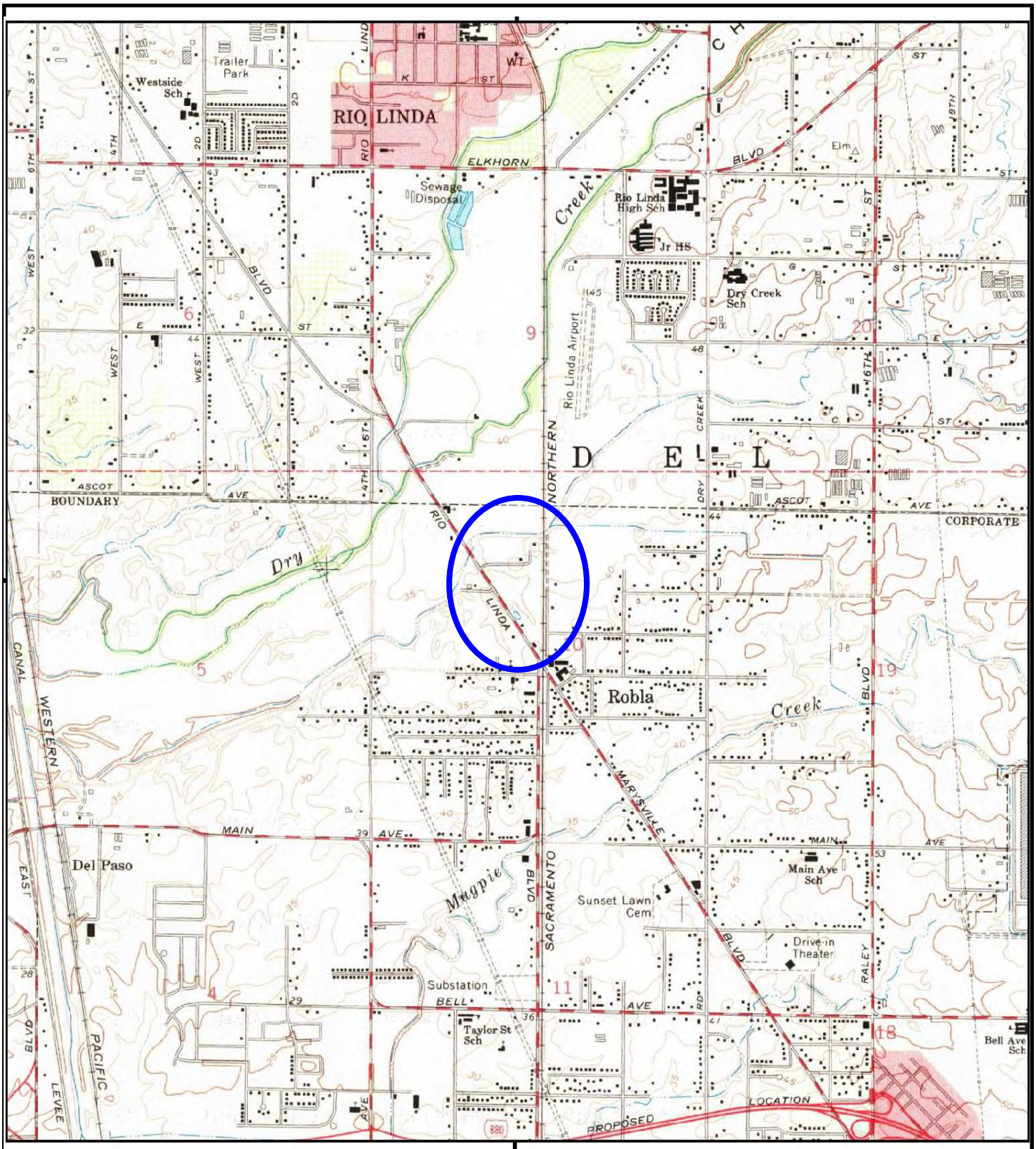
EDR 1966

AERIAL PHOTO OF SITE IN 1966

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 15



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

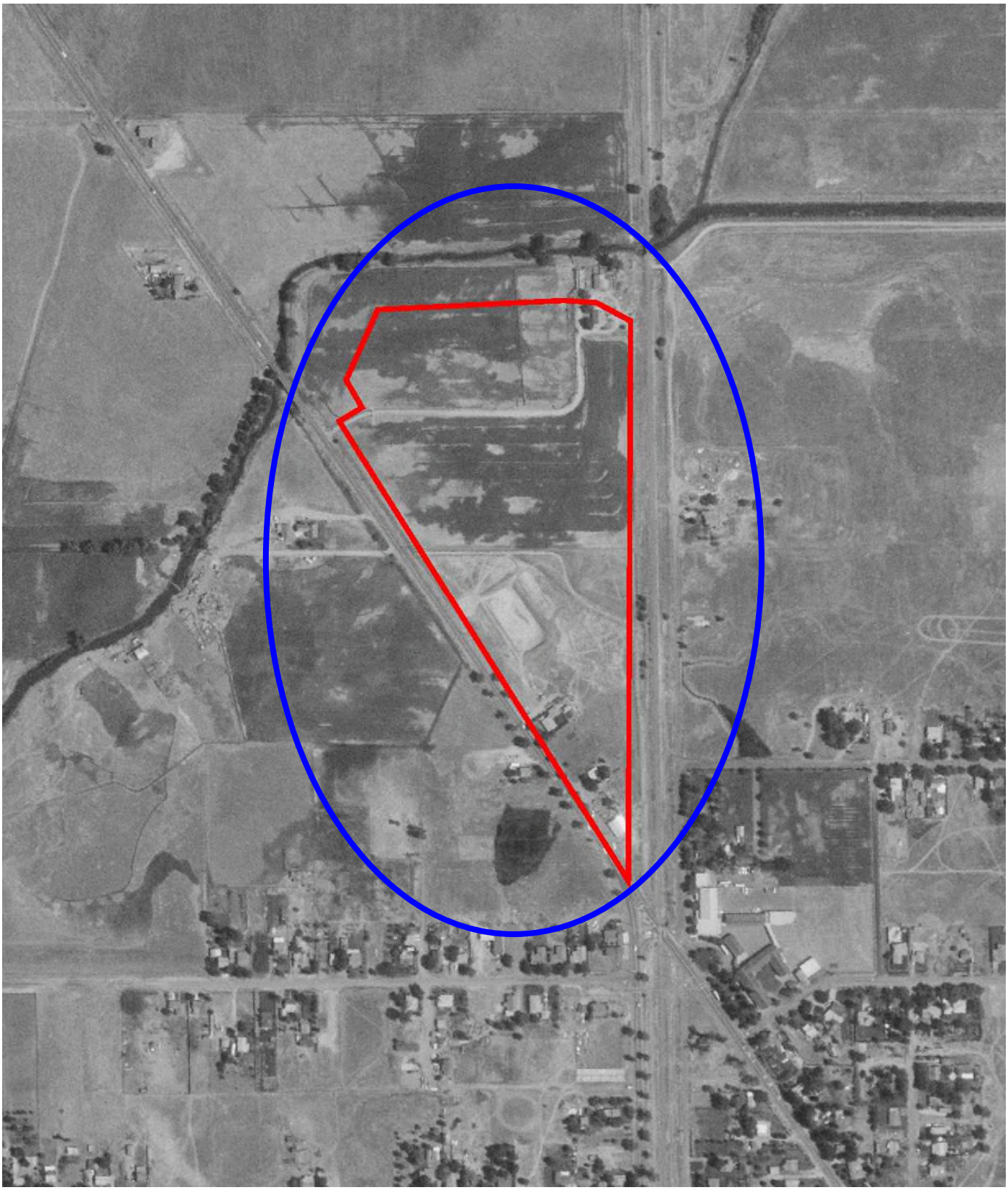
USGS 1967

TOPOGRAPHIC MAP OF SITE IN 1967

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 16



North

EDR 1972

AERIAL PHOTO OF SITE IN 1972

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 17

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

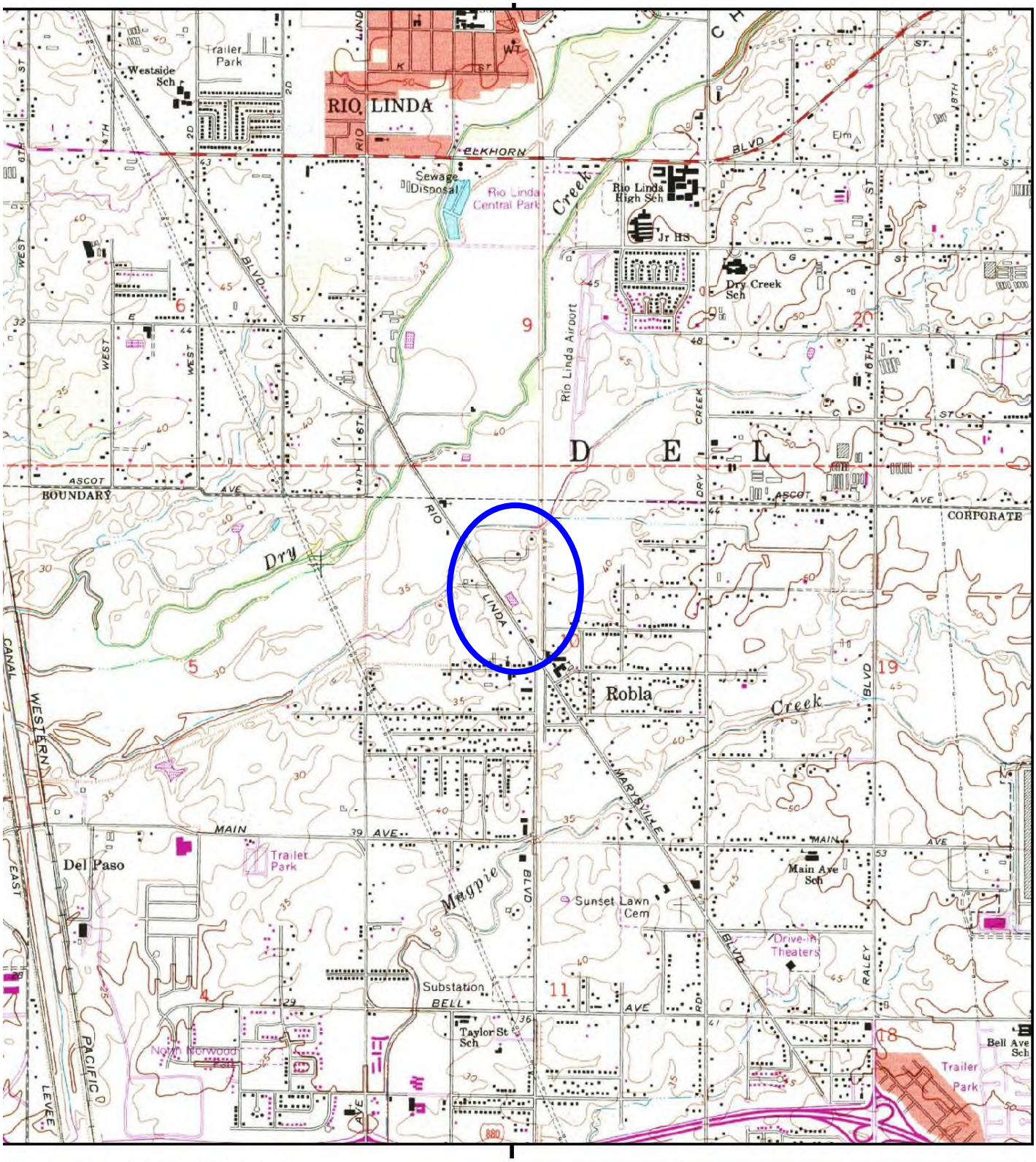
USGS 1975

TOPOGRAPHIC MAP OF SITE IN 1975

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 18



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

North

USGS 1980

TOPOGRAPHIC MAP OF SITE IN 1980

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 19

North

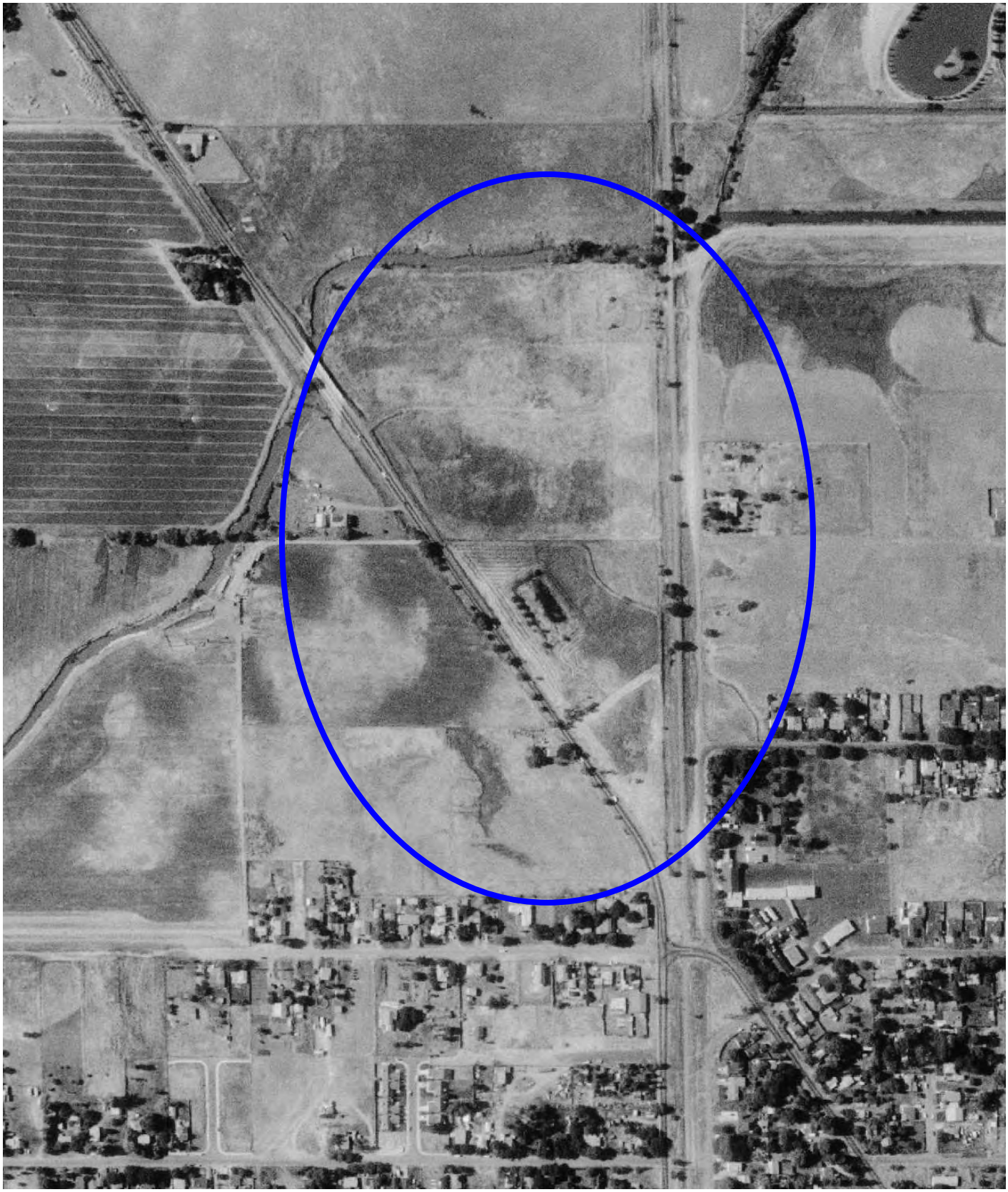
EDR 1984

AERIAL PHOTO OF SITE IN 1984

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 20



North

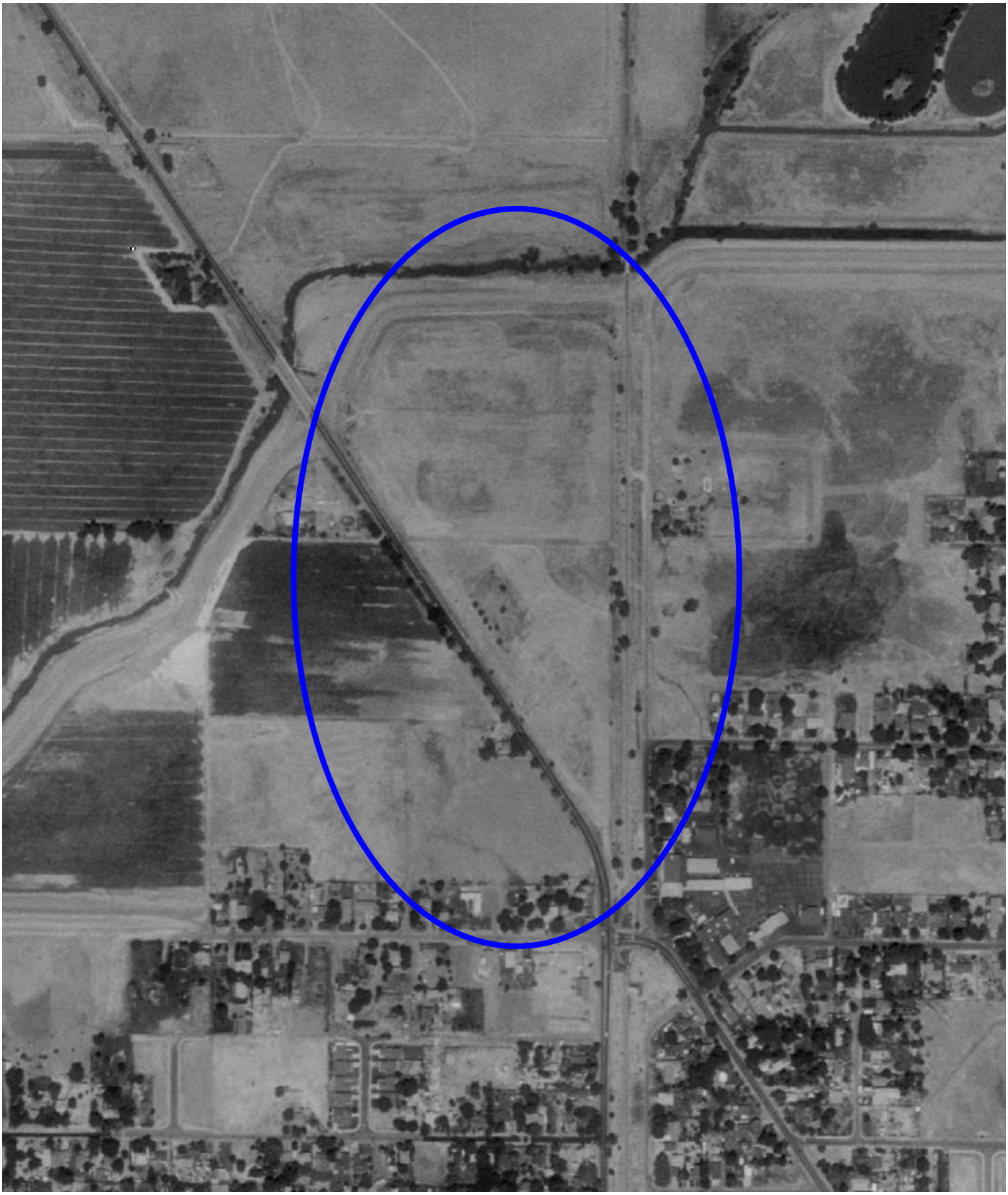
EDR 1993

AERIAL PHOTO OF SITE IN 1993

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 21



North

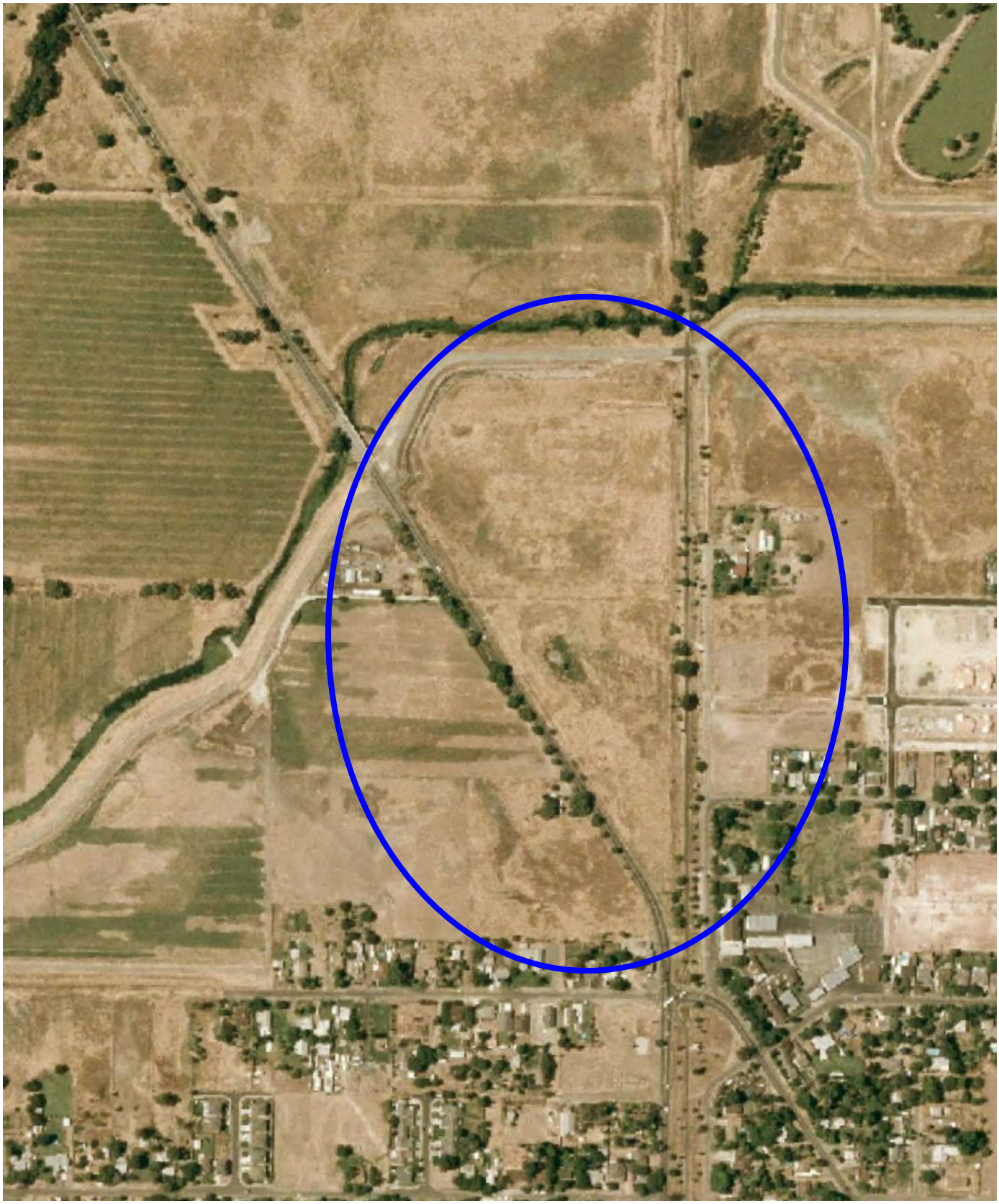
EDR 1998

AERIAL PHOTO OF SITE IN 1998

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 22



North

EDR 2006

AERIAL PHOTO OF SITE IN 2006

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 23

North

EDR 2009

AERIAL PHOTO OF SITE IN 2009

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 24

North

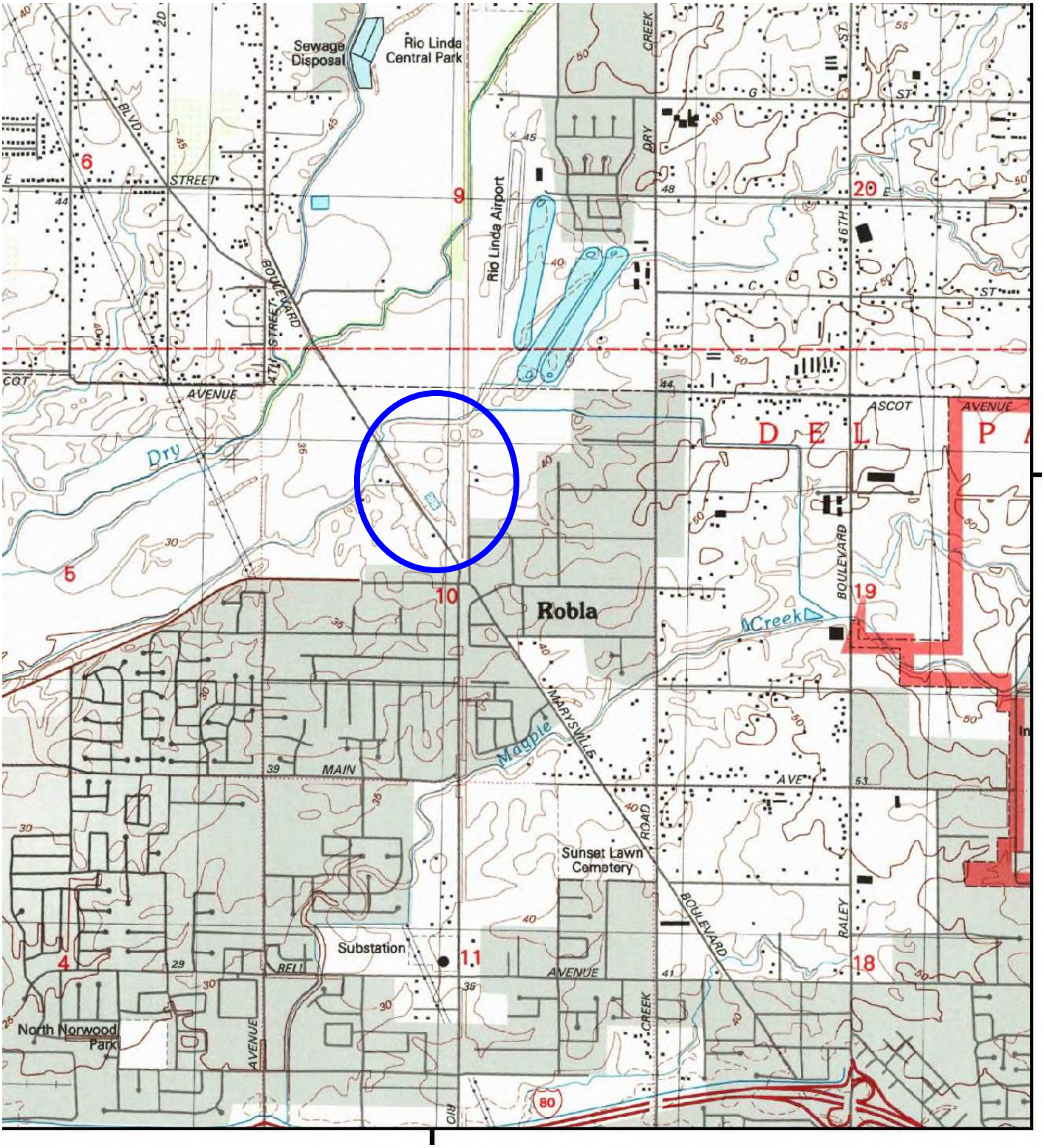
EDR 2012

AERIAL PHOTO OF SITE IN 2012

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 25



s information from the
et(s).

0 Miles 0.25 0.5 1 1.5

North

USGS 2012

TOPOGRAPHIC MAP OF SITE IN 2012

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 26

North

EDR 2016

AERIAL PHOTO OF SITE IN 2016

ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 27

North

Google Earth 2018

AERIAL PHOTO OF SITE IN 2018
ROBLA VILLAGE PROPERTY
RIO LINDA BOULEVARD
SACRAMENTO, CALIFORNIA

LUSH GEOSCIENCES, INC.

FIGURE 28

APPENDIX A
SITE PHOTOS

North edge of Site from east to west.

Northern portion of Site from northeast to southwest.

East edge of northern part of Site from north to south.

Central part of Site from east to west.

Northern part of Site from southeast to northwest.

Southern part of Site from northeast to southwest.

Northern portion of Site from southeast to northwest.

Northern portion of Site from southeast to northwest.

Site from northeast to southwest.

Southern portion of Site from northeast to southwest.

Southern portion of Site from east to west, debris piles.

Southern portion of Site from southeast to northwest, debris piles.

Southern portion of Site from east to west, debris piles.

Southern portion of Site from south to north.

South end of Site from southeast to northwest.

South end of Site from southeast to northwest.

South end of Site from northeast to southwest, debris pile.

Debris pile near south end of Site.

South end of Site from southeast to northwest.

South end of Site from northeast to southwest.

South end of Site from southeast to northwest.

West side of Site from southwest to northeast.

South end of Site from northwest to southeast.

Site from southwest to northeast.

Southern part of Site from west to east.

Central part of Site from west to east.

Central part of Site from northwest to southeast.

Northern part of Site from southwest to northeast.

West edge of Site from south to north.

North edge of Site from west to east.

Site from northwest to southeast.

West edge of Site from north to south.

School adjacent to east of south end of Site.

School administration east of south end of Site.

Bike path east of south end of Site from south to north.

Residences east of central part of Site.

Residences east of southern portion of Site.

Bike path adjoin east side of Site from south to north.

Residences east of central part of Site from southwest to northeast.

Residences east of northern portion of Site.

Vacant land north of Site.

Levee adjacent to north of north edge of Site from east to west.

Vacant land west of south end of Site.

Residences and vacant land west of south end of Site.

Residences southwest of Site.

Residence west of central part of Site.

Vacant land west of Site.

Vacant land west of Site from southeast to northwest,

Residence west of north edge of Site.

Levee system northwest of northwest corner of Site.

Levee system adjacent to north of Site from southwest to northeast.

APPENDIX B
EDR REPORTS

APPENDIX B-1
EDR RADIUS SUMMARY REPORT

Rio Linda
5330 Rio Linda
Sacramento, CA 95838

Inquiry Number: 5925634.11s
January 06, 2020

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	20
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-12
Physical Setting Source Map Findings	A-14
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

5330 RIO LINDA
SACRAMENTO, CA 95838

COORDINATES

Latitude (North):	38.6642720 - 38˚ 39' 51.37''
Longitude (West):	121.4485730 - 121˚ 26' 54.86''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	634980.4
UTM Y (Meters):	4280456.0
Elevation:	38 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140621
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
5330 RIO LINDA
SACRAMENTO, CA 95838

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	ROBLA SCHOOL DISTRIC	5248 ROSE	LUST, Sacramento Co. CS, HIST UST, HIST CORTESE,...	Higher	186, 0.035, SE
A2	WILLIAM STOLK	5209 RIO LINDA BL	Sacramento Co. ML	Higher	199, 0.038, SSE
A3	SMITTY S SERVICE GAS	5209 RIO LINDA BLV	EDR Hist Auto	Higher	214, 0.041, SSE
4	P. PULSIFER	651 PINEDALE AV	Sacramento Co. ML	Higher	1097, 0.208, SSW
5		544 CLAIRE AVE	RCRA NonGen / NLR	Higher	1310, 0.248, SW
6	NORWOOD JUNIOR HIGH	NORWOOD AVENUE/MAIN	ENVIROSTOR, SCH, CERS	Higher	4119, 0.780, SSW
7	GATEWAY COMMUNITY CH	4525 MAY STREET	ENVIROSTOR, SCH	Higher	4817, 0.912, SSE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: A review of the ENVIROSTOR list, as provided by EDR, and dated 07/29/2019 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NORWOOD JUNIOR HIGH Status: No Action Required Facility Id: 34970009	***NORWOOD AVENUE/MAIN***	***SSW 1/2 - 1 (0.780 mi.)***	***6***	***10***
GATEWAY COMMUNITY CH Status: No Action Required Facility Id: 60001750	***4525 MAY STREET***	***SSE 1/2 - 1 (0.912 mi.)***	***7***	***10***

State and tribal leaking storage tank lists

LUST: A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC Database: LUST REG 5, Date of Government Version: 07/01/2008 Database: LUST, Date of Government Version: 09/09/2019 Status: Completed - Case Closed Status: Case Closed Global Id: T0606700023	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***

EXECUTIVE SUMMARY

Sacramento Co. CS: A review of the Sacramento Co. CS list, as provided by EDR, and dated 08/06/2019 has revealed that there is 1 Sacramento Co. CS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***
Facility Id: RO0001024				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

HIST UST: A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***
Facility Id: 00000008955				

Other Ascertainable Records

RCRA NonGen / NLR: A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	544 CLAIRE AVE	SW 1/8 - 1/4 (0.248 mi.)	5	10

HIST CORTESE: A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***
Reg Id: 340035				

Sacramento Co. ML: A review of the Sacramento Co. ML list, as provided by EDR, and dated 08/07/2019 has revealed that there are 3 Sacramento Co. ML sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WILLIAM STOLK Facility Status: Inactive. Included on a listing no longer updated.	5209 RIO LINDA BL	SSE 0 - 1/8 (0.038 mi.)	A2	9
P. PULSIFER Facility Status: Inactive. Included on a listing no longer updated. Facility Id: U01912	651 PINEDALE AV	SSW 1/8 - 1/4 (0.208 mi.)	4	9

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately 0.125 miles of the target property.

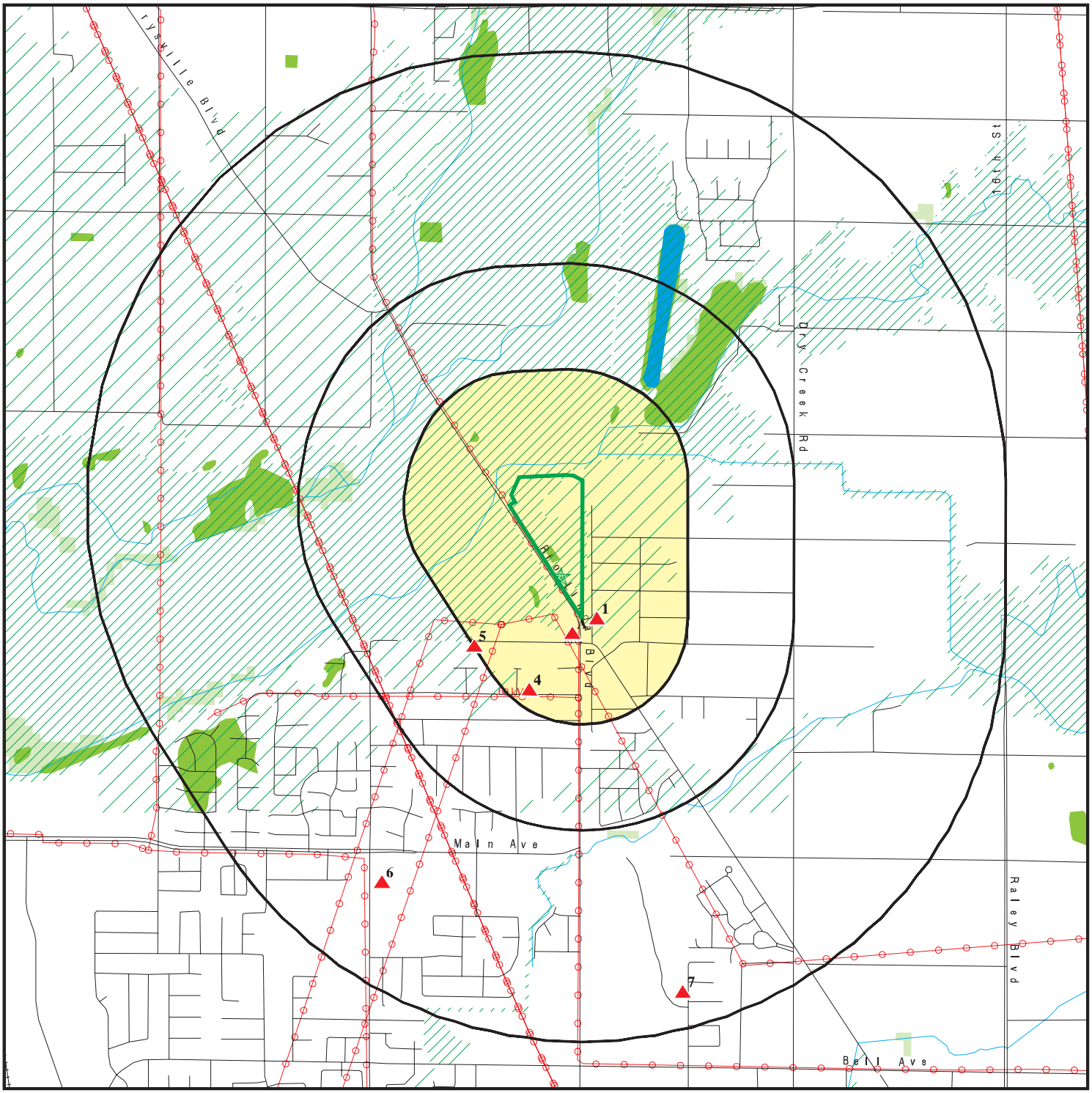
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SMITTY S SERVICE GAS	5209 RIO LINDA BLV	SSE 0 - 1/8 (0.041 mi.)	A3	9

Count: 2 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
SACRAMENTO	S106230367	SACRAMENTO TRAP SHOOT RANGE**	DEL PASO REGIONAL PARK		CPS-SLIC
SACRAMENTO	S121673625	SHRA PROJECT RIO LINDA BLVD	RIO LINDA BLVD	95673	CIWQS

OVERVIEW MAP - 5925634.11S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

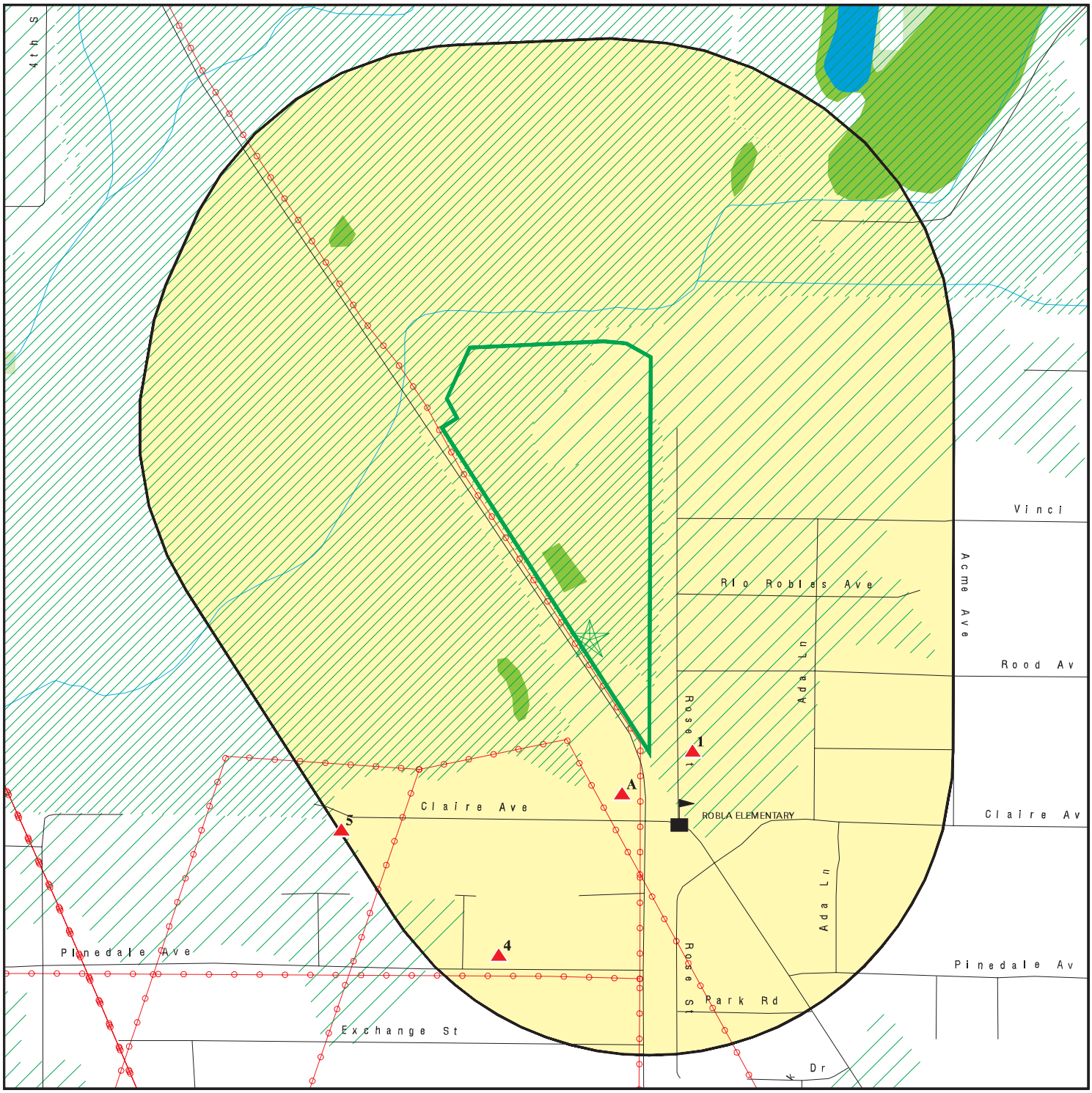
N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Rio Linda	CLIENT: Kim Lush
ADDRESS: 5330 Rio Linda Sacramento CA 95838	CONTACT: Andrew Lush INQUIRY #: 5925634.11s
LAT/LONG: 38.664272 / 121.448573	DATE: January 06, 2020 6:57 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

DETAIL MAP - 5925634.11S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Rio Linda	CLIENT: Kim Lush
ADDRESS: 5330 Rio Linda Sacramento CA 95838	CONTACT: Andrew Lush INQUIRY #: 5925634.11s
LAT/LONG: 38.664272 / 121.448573	DATE: January 06, 2020 6:58 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	2	NR	2
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		1	0	0	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Sacramento Co. CS	0.500		1	0	0	NR	NR	1
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		1	0	NR	NR	NR	1
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		1	0	0	NR	NR	1
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
Sacramento Co. ML	0.250		2	1	NR	NR	NR	3
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		1	NR	NR	NR	NR	1
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	7	2	0	2	0	11

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
1 **SE** **< 1/8** **0.035 mi.** **186 ft.** **Relative:** **Higher**	**ROBLA SCHOOL DISTRICT** **5248 ROSE** **SACRAMENTO, CA 95838** **Click here for full text details** **LUST** Status Case Closed Status Completed - Case Closed Global Id T0606700023 **Sacramento Co. CS** Facility Id RO0001024 **HIST UST** Facility Id 00000008955 **HIST CORTESE** Reg Id 340035	**LUST** **Sacramento Co. CS** **HIST UST** **HIST CORTESE** **Sacramento Co. ML** **CERS**	**U001616007** **N/A**
A2 **SSE** **< 1/8** **0.038 mi.** **199 ft.** **Relative:** **Higher**	**WILLIAM STOLK** **5209 RIO LINDA BL** **RIO LINDA, CA 95673** **Click here for full text details** **Sacramento Co. ML** Facility Status Inactive. Included on a listing no longer updated.	**Sacramento Co. ML**	**S109612678** **N/A**
A3 **SSE** **< 1/8** **0.041 mi.** **214 ft.** **Relative:** **Higher**	**SMITTY S SERVICE GAS OIL & GROCERIES** **5209 RIO LINDA BLVD** **SACRAMENTO, CA** **Click here for full text details**	**EDR Hist Auto**	**1009021294** **N/A**
4 **SSW** **1/8-1/4** **0.208 mi.** **1097 ft.** **Relative:** **Higher**	**P. PULSIFER** **651 PINEDALE AV** **SACRAMENTO, CA 95838** **Click here for full text details** **Sacramento Co. ML** Facility Id U01912 Facility Status Inactive. Included on a listing no longer updated.	**Sacramento Co. ML**	**S105271118** **N/A**

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
5 **SW** **1/8-1/4** **0.248 mi.** **1310 ft.** **Relative:** **Higher**	**544 CLAIRE AVE** **SACRAMENTO, CA 95838** **Click here for full text details**	**RCRA NonGen / NLR**	**1025867771** **CAL000332622**
6 **SSW** **1/2-1** **0.780 mi.** **4119 ft.** **Relative:** **Higher**	**NORWOOD JUNIOR HIGH** **NORWOOD AVENUE/MAIN AVENUE** **SACRAMENTO, CA 95838** **Click here for full text details** **ENVIROSTOR** Status No Action Required Facility Id 34970009 **SCH** Facility Id 34970009 Status No Action Required	**ENVIROSTOR** **SCH** **CERS**	**S118756798** **N/A**
7 **SSE** **1/2-1** **0.912 mi.** **4817 ft.** **Relative:** **Higher**	**GATEWAY COMMUNITY CHARTERS PROPOSED NEW CHARTER SC** **4525 MAY STREET** **SACRAMENTO, CA 95838** **Click here for full text details** **ENVIROSTOR** Status No Action Required Facility Id 60001750 **SCH** Facility Id 60001750 Status No Action Required	**ENVIROSTOR** **SCH**	**S118757253** **N/A**

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	09/23/2019	09/24/2019	11/06/2019
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	06/30/2018	07/16/2019	09/24/2019
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	10/21/2019	10/22/2019	01/03/2020
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	10/21/2019	10/22/2019	01/02/2020
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	10/21/2019	10/22/2019	01/03/2020
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	05/15/2019	06/24/2019	08/21/2019
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	09/03/2019	09/04/2019	11/05/2019
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	09/23/2019	09/24/2019	11/06/2019
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/06/2019
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	05/01/2019	05/14/2019	07/17/2019
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	10/31/2019	11/01/2019	12/11/2019
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	09/03/2019	09/04/2019	11/05/2019
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	08/28/2019	08/30/2019	10/29/2019
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	09/27/2019	10/01/2019	11/07/2019
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	09/06/2019	10/11/2019	12/12/2019
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2017	06/24/2019	08/22/2019
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	07/19/2019	07/22/2019	09/26/2019
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	10/17/2019	10/22/2019	01/02/2020
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	08/16/2019	08/20/2019	10/18/2019
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	03/26/2019	03/27/2019	04/30/2019
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2017	05/29/2019	07/22/2019
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	08/19/2019	08/20/2019	10/18/2019
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	10/07/2019	10/08/2019	11/07/2019
CA	ICE	ICE	Department of Toxic Subsances Control	08/19/2019	08/20/2019	10/18/2019
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	09/09/2019	09/09/2019	11/05/2019
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	08/29/2019	08/30/2019	10/29/2019
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	10/31/2019
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/05/2019
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	MINES	Mines Site Location Listing	Department of Conservation	09/09/2019	09/09/2019	11/05/2019
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	07/19/2019	09/04/2019	11/05/2019
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	09/16/2019	09/18/2019	11/06/2019
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	08/12/2019	08/13/2019	10/16/2019
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	09/03/2019	09/04/2019	11/05/2019
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	09/09/2019	09/09/2019	11/05/2019
CA	PROC	Certified Processors Database	Department of Conservation	09/09/2019	09/09/2019	11/05/2019
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	08/01/2019	08/02/2019	10/11/2019
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	08/12/2019	08/13/2019	10/09/2019
CA	SWRCY	Recycler Database	Department of Conservation	09/09/2019	09/09/2019	11/07/2019
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	08/20/2019	08/20/2019	11/18/2019
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	09/09/2019	09/09/2019	11/01/2019
CA	UST	Active UST Facilities	SWRCB	09/09/2019	09/09/2019	10/31/2019
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	09/06/2019	09/09/2019	10/31/2019
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	08/20/2019	09/09/2019	10/31/2019
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	05/08/2018	07/11/2018	09/13/2018
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	09/09/2019	09/09/2019	11/06/2019
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2019	09/10/2019	10/17/2019
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	09/30/2019	10/09/2019	12/20/2019
US	CORRACTS	Corrective Action Report	EPA	12/16/2019	12/16/2019	12/20/2019
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	07/01/2019	07/31/2019	10/24/2019
US	Delisted NPL	National Priority List Deletions	EPA	10/25/2019	11/07/2019	11/20/2019
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	10/06/2019	10/08/2019	01/02/2020
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	09/09/2019	09/09/2019	09/23/2019
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	04/03/2019	04/05/2019	05/14/2019
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FEMA UST	Underground Storage Tank Listing	FEMA	08/27/2019	08/28/2019	11/11/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	08/12/2019	09/04/2019	12/03/2019
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	05/15/2019	05/21/2019	08/08/2019
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	08/19/2019	08/20/2019	11/11/2019
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	06/24/2019	06/26/2019	09/23/2019
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/11/2019	07/29/2019	10/17/2019
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/16/2019	07/29/2019	10/17/2019
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	04/12/2019	07/29/2019	10/17/2019
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/08/2019	07/30/2019	10/17/2019
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	05/01/2019	07/29/2019	10/17/2019
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	07/02/2019	10/16/2019	10/24/2019
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	05/02/2019	10/22/2019	11/11/2019
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/08/2019	07/29/2019	10/17/2019
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/11/2019	07/30/2019	10/17/2019
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/16/2019	07/30/2019	10/17/2019
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	04/12/2019	07/29/2019	10/17/2019
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/08/2019	07/29/2019	10/17/2019
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	05/01/2019	07/29/2019	10/17/2019
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	05/02/2019	07/29/2019	10/17/2019
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	05/02/2019	10/22/2019	11/11/2019
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/08/2019	07/29/2019	10/17/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	10/25/2019	11/07/2019	11/20/2019
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	10/25/2019	11/07/2019	11/20/2019
US	LUCIS	Land Use Control Information System	Department of the Navy	08/13/2019	08/20/2019	08/26/2019
US	MINES MRDS	Mineral Resources Data System	USGS	04/06/2018	10/21/2019	10/24/2019
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	09/17/2019	09/18/2019	12/03/2019
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	06/20/2019	06/20/2019	08/08/2019
US	NPL	National Priority List	EPA	10/25/2019	11/07/2019	11/20/2019
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	10/09/2019	10/11/2019	12/20/2019
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	PRP	Potentially Responsible Parties	EPA	10/25/2019	11/07/2019	11/21/2019
US	Proposed NPL	Proposed National Priority List Sites	EPA	10/25/2019	11/07/2019	11/20/2019
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RMP	Risk Management Plans	Environmental Protection Agency	04/25/2019	05/02/2019	05/23/2019
US	ROD	Records Of Decision	EPA	10/25/2019	11/07/2019	11/20/2019
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	10/25/2019	11/07/2019	11/21/2019
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	10/25/2019	11/07/2019	11/21/2019
US	SSTS	Section 7 Tracking Systems	EPA	09/30/2018	04/24/2019	08/08/2019
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2017	11/16/2018	11/21/2019
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/01/2019	08/21/2019	11/11/2019
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	06/03/2019	06/04/2019	08/26/2019
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	09/23/2019	09/24/2019	12/20/2019
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	08/01/2019	08/27/2019	11/11/2019
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2017	01/17/2019	04/01/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	05/14/2019	05/14/2019	08/05/2019
NJ	NJ MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2018	04/10/2019	05/16/2019
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	01/01/2019	05/01/2019	06/21/2019
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	06/30/2018	07/19/2019	09/10/2019
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2018	10/02/2019	12/10/2019
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	05/31/2018	06/19/2019	09/03/2019
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
CA	Daycare Centers	Sensitive Receptor: Licensed Facilities	Department of Social Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
CA	State Wetlands	Wetland Inventory	Department of Fish and Wildlife			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		Endeavor Business Media			
US	Electric Power Transmission Line Data		Endeavor Business Media			

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

RIO LINDA
5330 RIO LINDA
SACRAMENTO, CA 95838

TARGET PROPERTY COORDINATES

Latitude (North):	38.664272 - 38˚ 39’ 51.38’’
Longitude (West):	121.448573 - 121˚ 26’ 54.86’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	634980.4
UTM Y (Meters):	4280456.0
Elevation:	38 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5629066 RIO LINDA, CA
Version Date:	2012

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

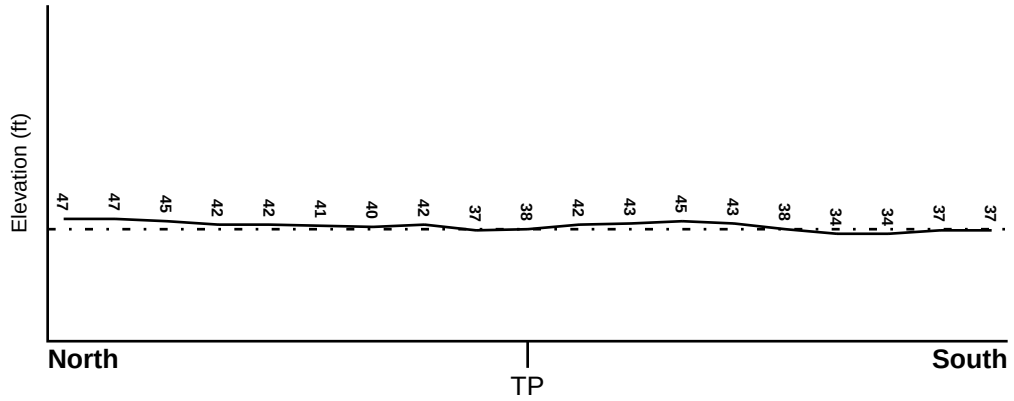
TOPOGRAPHIC INFORMATION

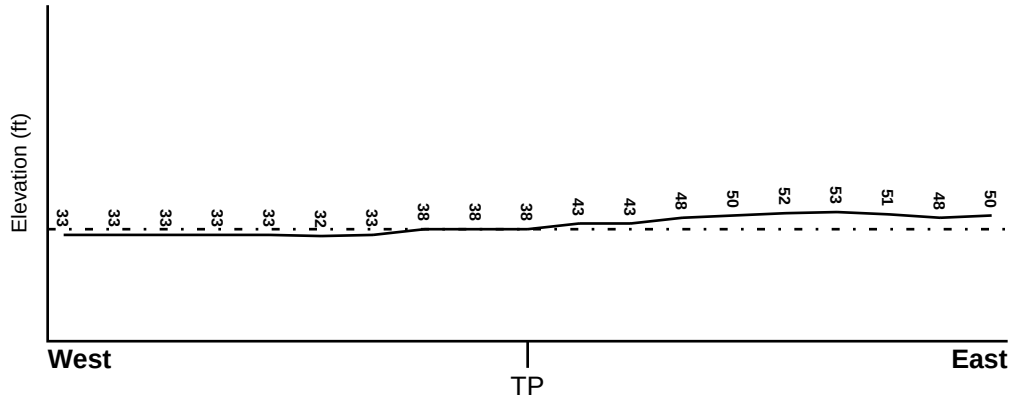
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 38 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06067C0062H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06067C0066H	FEMA FIRM Flood data
06067C0064J	FEMA FIRM Flood data
0602660005E	FEMA Q3 Flood data
06067C0068H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
RIO LINDA	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

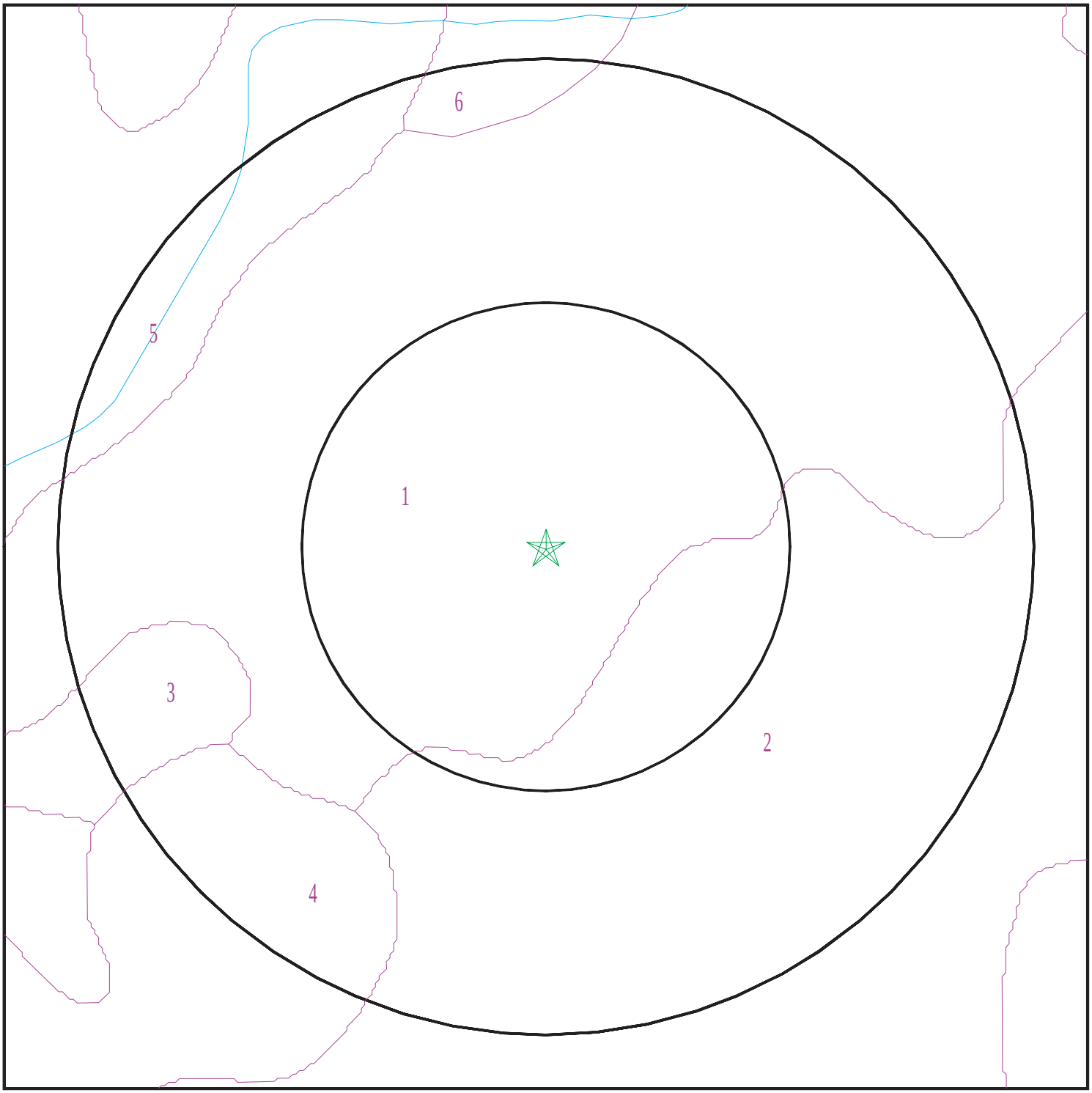
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5925634.11s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Rio Linda	CLIENT:	Kim Lush
ADDRESS:	5330 Rio Linda Sacramento CA 95838	CONTACT:	Andrew Lush
		INQUIRY #:	5925634.11s
LAT/LONG:	38.664272 / 121.448573	DATE:	January 06, 2020 6:58 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: MADERA

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	14 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
3	29 inches	59 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Map ID: 2

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
2	12 inches	29 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
3	29 inches	35 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
4	35 inches	59 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
5	59 inches	66 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1

Soil Map ID: 3

Soil Component Name: GALT

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	12 inches	31 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
3	31 inches	59 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
2	12 inches	29 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
3	29 inches	35 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
4	35 inches	59 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
5	59 inches	66 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 5

Soil Component Name: COSUMNES

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
2	7 inches	20 inches	stratified silty clay loam to clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
3	20 inches	42 inches	stratified clay loam to clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
4	42 inches	59 inches	stratified clay loam to clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6

Soil Map ID: 6

Soil Component Name: LIVEOAK

Soil Surface Texture: sandy clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	18 inches	48 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
3	48 inches	59 inches	stratified gravelly loamy coarse sand to sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000189778	1/2 - 1 Mile ENE
C7	USGS40000189811	1/2 - 1 Mile NW
D9	USGS40000189698	1/2 - 1 Mile SSE
D10	USGS40000189699	1/2 - 1 Mile SSE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

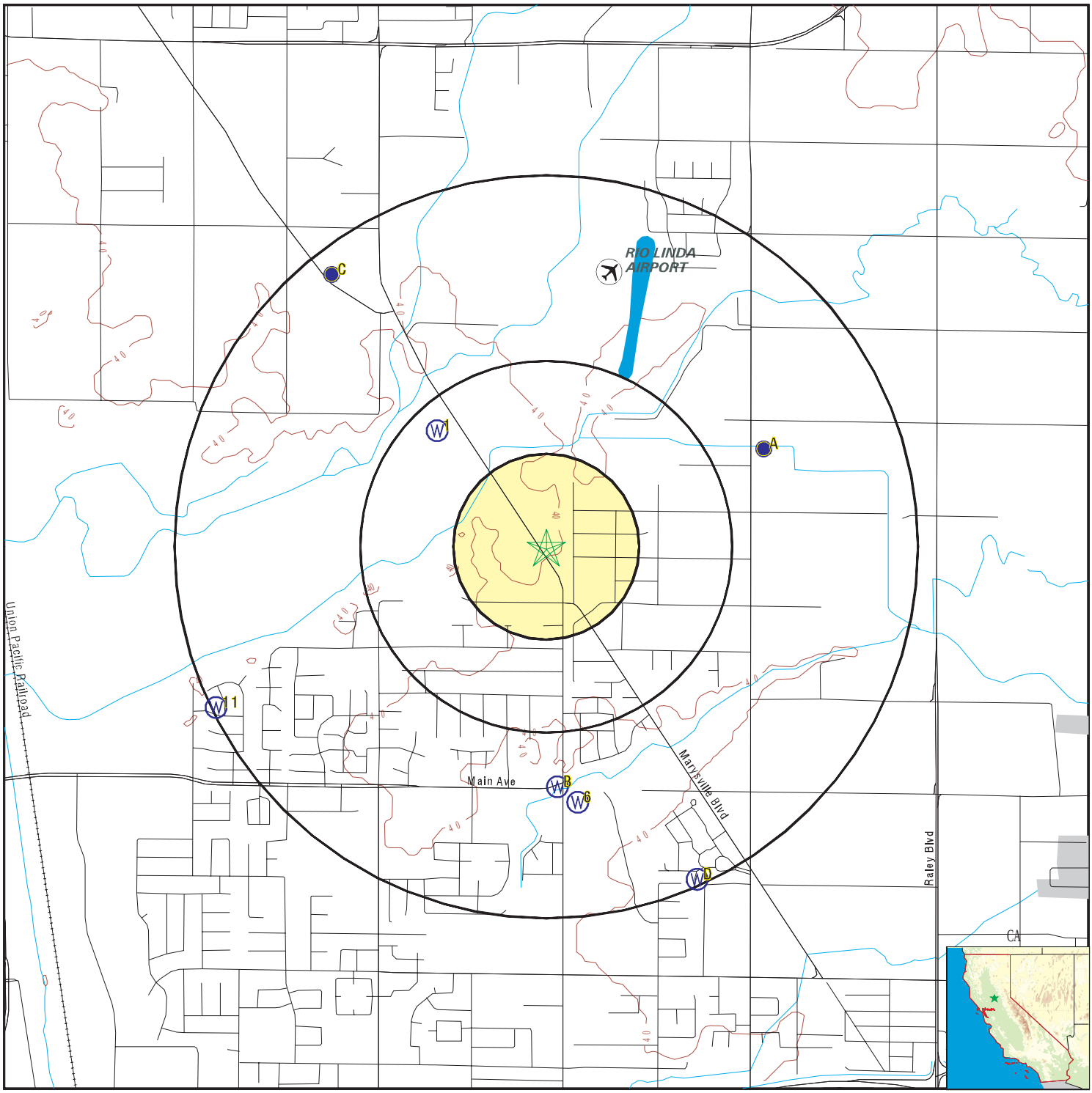
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CADWR8000038746	1/4 - 1/2 Mile NW
A3	8985	1/2 - 1 Mile ENE
B4	18575	1/2 - 1 Mile South
B5	8987	1/2 - 1 Mile South
6	CADWR8000038707	1/2 - 1 Mile South
C8	9869	1/2 - 1 Mile NW
11	CADWR8000038718	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 5925634.11s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Airports
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME: Rio Linda	CLIENT: Kim Lush
ADDRESS: 5330 Rio Linda Sacramento CA 95838	CONTACT: Andrew Lush
LAT/LONG: 38.664272 / 121.448573	INQUIRY #: 5925634.11s DATE: January 06, 2020 6:58 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
1 **NW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADWR8000038746**
A2 **ENE** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000189778**
A3 **ENE** **1/2 - 1 Mile** **Higher**	Click here for full text details	**CA WELLS**	**8985**
B4 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**18575**
B5 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**8987**
6 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADWR8000038707**
C7 **NW** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000189811**
C8 **NW** **1/2 - 1 Mile** **Higher**	Click here for full text details	**CA WELLS**	**9869**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
D9 **SSE** **1/2 - 1 Mile** **Higher**	**Click here for full text details**	**FED USGS**	**USGS40000189698**
D10 **SSE** **1/2 - 1 Mile** **Higher**	**Click here for full text details**	**FED USGS**	**USGS40000189699**
11 **WSW** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**CADWR8000038718**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for SACRAMENTO County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for SACRAMENTO COUNTY, CA

Number of sites tested: 52

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.665 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.200 pCi/L	100%	0%	0%
Basement	8.350 pCi/L	50%	50%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

APPENDIX B-2
RADIUS REPORT

Rio Linda
5330 Rio Linda
Sacramento, CA 95838

Inquiry Number: 5925634.11s
January 06, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	20
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-12
Physical Setting Source Map Findings	A-14
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

5330 RIO LINDA
SACRAMENTO, CA 95838

COORDINATES

Latitude (North):	38.6642720 - 38˚ 39' 51.37''
Longitude (West):	121.4485730 - 121˚ 26' 54.86''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	634980.4
UTM Y (Meters):	4280456.0
Elevation:	38 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5629066 RIO LINDA, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140621
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
5330 RIO LINDA
SACRAMENTO, CA 95838

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	ROBLA SCHOOL DISTRIC	5248 ROSE	LUST, Sacramento Co. CS, HIST UST, HIST CORTESE,...	Higher	186, 0.035, SE
A2	WILLIAM STOLK	5209 RIO LINDA BL	Sacramento Co. ML	Higher	199, 0.038, SSE
A3	SMITTY S SERVICE GAS	5209 RIO LINDA BLV	EDR Hist Auto	Higher	214, 0.041, SSE
4	P. PULSIFER	651 PINEDALE AV	Sacramento Co. ML	Higher	1097, 0.208, SSW
5		544 CLAIRE AVE	RCRA NonGen / NLR	Higher	1310, 0.248, SW
6	NORWOOD JUNIOR HIGH	NORWOOD AVENUE/MAIN	ENVIROSTOR, SCH, CERS	Higher	4119, 0.780, SSW
7	GATEWAY COMMUNITY CH	4525 MAY STREET	ENVIROSTOR, SCH	Higher	4817, 0.912, SSE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing
SEMS ..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-VSQG ..... RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System

EXECUTIVE SUMMARY

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Properties
INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations
ODI..... Open Dump Inventory
IHS OPEN DUMPS..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL..... Delisted National Clandestine Laboratory Register

HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
CERS HAZ WASTE	CERS HAZ WASTE
US CDL	National Clandestine Laboratory Register
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
CERS TANKS	California Environmental Reporting System (CERS) Tanks
CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees

EXECUTIVE SUMMARY

INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List

EXECUTIVE SUMMARY

RGA LUST---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 07/29/2019 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NORWOOD JUNIOR HIGH Status: No Action Required Facility Id: 34970009	***NORWOOD AVENUE/MAIN***	***SSW 1/2 - 1 (0.780 mi.)***	***6***	***14***
GATEWAY COMMUNITY CH Status: No Action Required Facility Id: 60001750	***4525 MAY STREET***	***SSE 1/2 - 1 (0.912 mi.)***	***7***	***17***

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within

approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***

Database: LUST REG 5, Date of Government Version: 07/01/2008
Database: LUST, Date of Government Version: 09/09/2019
Status: Completed - Case Closed
Status: Case Closed
Global Id: T0606700023

Sacramento Co. CS: List of sites where unauthorized releases of potentially hazardous materials have occurred.

A review of the Sacramento Co. CS list, as provided by EDR, and dated 08/06/2019 has revealed that there is 1 Sacramento Co. CS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***

Facility Id: RO0001024

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***

Facility Id: 00000008955

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	544 CLAIRE AVE	SW 1/8 - 1/4 (0.248 mi.)	5	13

EXECUTIVE SUMMARY

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***
Reg Id: 340035				

Sacramento Co. ML: Sacramento County Master List. Any business that has hazardous materials on site - hazardous materials storage sites, underground storage tanks, waste generators.

A review of the Sacramento Co. ML list, as provided by EDR, and dated 08/07/2019 has revealed that there are 3 Sacramento Co. ML sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBLA SCHOOL DISTRIC	***5248 ROSE***	***SE 0 - 1/8 (0.035 mi.)***	***1***	***9***
WILLIAM STOLK	5209 RIO LINDA BL	SSE 0 - 1/8 (0.038 mi.)	A2	12
Facility Status: Inactive. Included on a listing no longer updated.				
P. PULSIFER	651 PINEDALE AV	SSW 1/8 - 1/4 (0.208 mi.)	4	13
Facility Status: Inactive. Included on a listing no longer updated.				
Facility Id: U01912				

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately 0.125 miles of the target property.

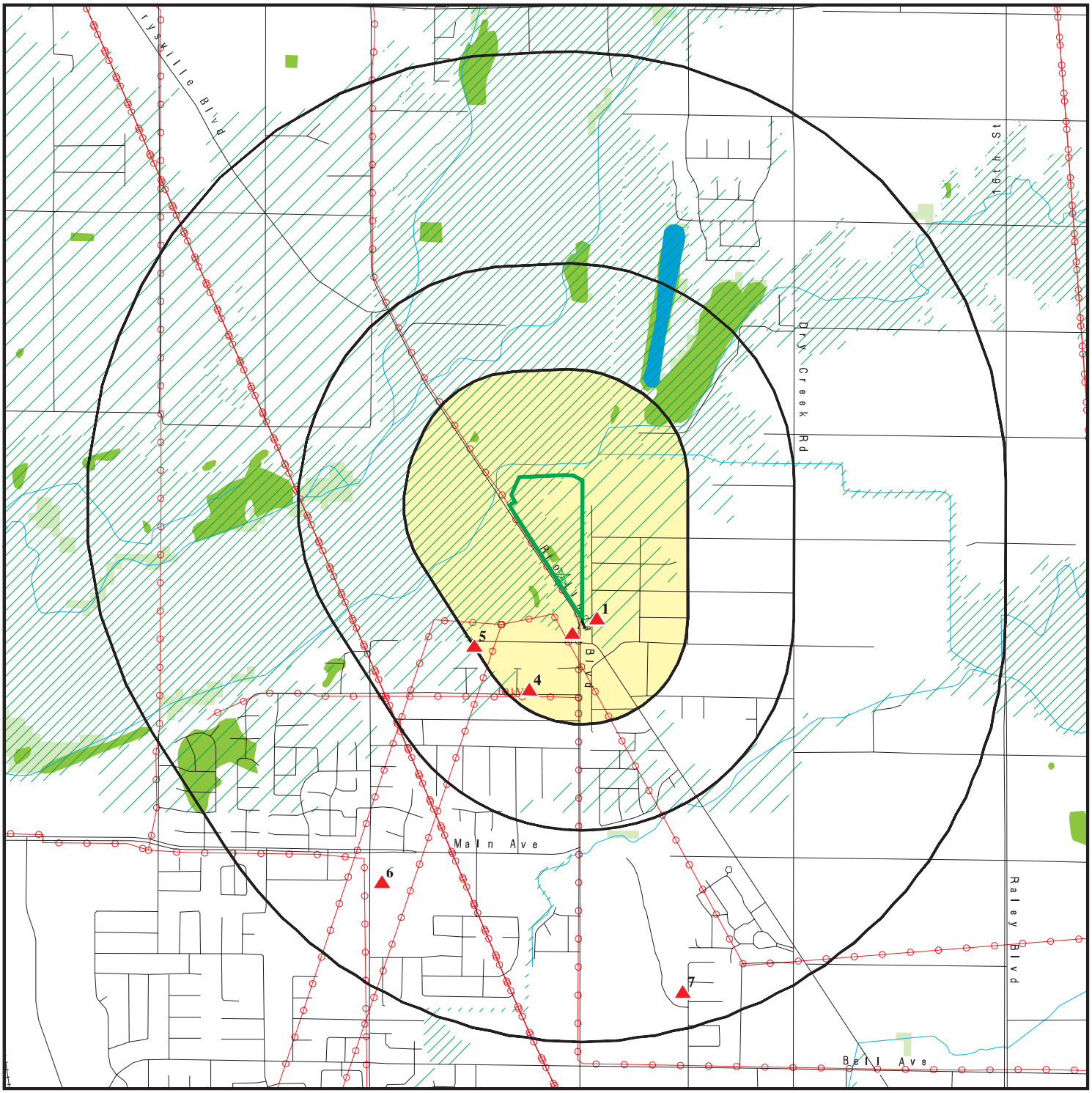
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SMITTY S SERVICE GAS	5209 RIO LINDA BLV	SSE 0 - 1/8 (0.041 mi.)	A3	13

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 2 records.

Site Name	Database(s)
SHRA PROJECT RIO LINDA BLVD	CIWQS
SACRAMENTO TRAP SHOOT RANGE**	CPS-SLIC

OVERVIEW MAP - 5925634.11S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

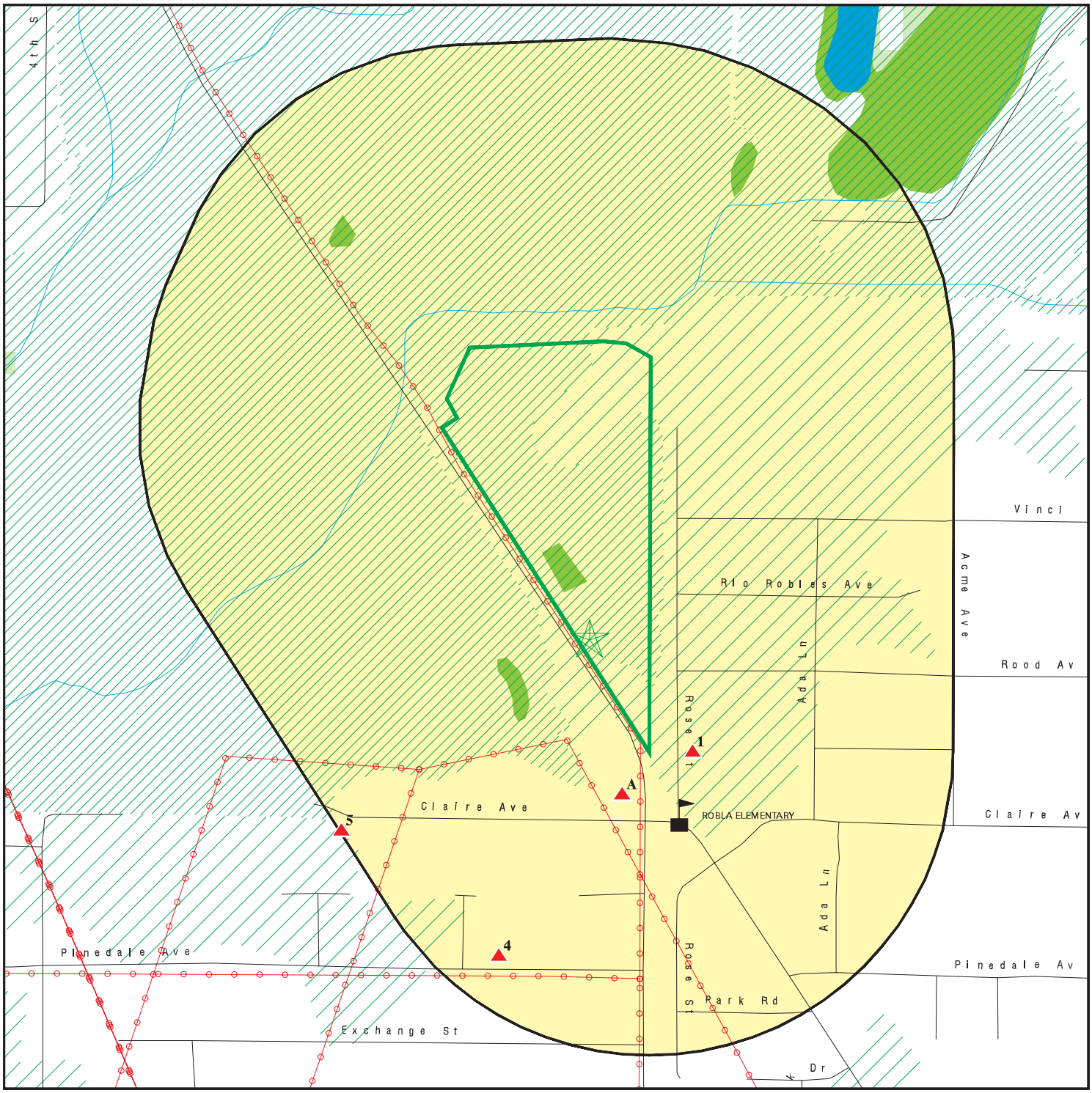
N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Rio Linda	CLIENT: Kim Lush
ADDRESS: 5330 Rio Linda Sacramento CA 95838	CONTACT: Andrew Lush INQUIRY #: 5925634.11s
LAT/LONG: 38.664272 / 121.448573	DATE: January 06, 2020 6:57 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

DETAIL MAP - 5925634.11S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Rio Linda	CLIENT: Kim Lush
ADDRESS: 5330 Rio Linda Sacramento CA 95838	CONTACT: Andrew Lush INQUIRY #: 5925634.11s
LAT/LONG: 38.664272 / 121.448573	DATE: January 06, 2020 6:58 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	2	NR	2
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		1	0	0	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Sacramento Co. CS	0.500		1	0	0	NR	NR	1
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		1	0	NR	NR	NR	1
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		1	0	0	NR	NR	1
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
Sacramento Co. ML	0.250		2	1	NR	NR	NR	3
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		1	NR	NR	NR	NR	1
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	7	2	0	2	0	11

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 SE < 1/8 0.035 mi. 186 ft.

Relative: Higher

Actual: 42 ft.

ROBLA SCHOOL DISTRICT
5248 ROSE
SACRAMENTO, CA 95838

LUST
Sacramento Co. CS
HIST UST
HIST CORTESE
Sacramento Co. ML
CERS

U001616007
N/A

LUST:

Name:	ROBLA SCHOOL DISTRICT
Address:	5248 ROSE ST
City,State,Zip:	SACRAMENTO, CA 95838
Lead Agency:	SACRAMENTO COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606700023
Global Id:	T0606700023
Latitude:	38.662838
Longitude:	-121.446173
Status:	Completed - Case Closed
Status Date:	04/03/1987
Case Worker:	Not reported
RB Case Number:	340035
Local Agency:	Not reported
File Location:	Not reported
Local Case Number:	RO#1024
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

LUST:

Global Id:	T0606700023
Contact Type:	Regional Board Caseworker
Contact Name:	VERA FISCHER
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5S)
Address:	11020 SUN CENTER DRIVE #200
City:	RANCHO CORDOVA
Email:	vera.fischer@waterboards.ca.gov
Phone Number:	Not reported

LUST:

Global Id:	T0606700023
Action Type:	RESPONSE
Date:	09/23/1986
Action:	Correspondence
Global Id:	T0606700023
Action Type:	RESPONSE
Date:	10/06/1986
Action:	Unauthorized Release Form
Global Id:	T0606700023
Action Type:	RESPONSE
Date:	04/01/1987
Action:	Site Assessment Report
Global Id:	T0606700023
Action Type:	RESPONSE
Date:	04/28/1987
Action:	Correspondence

ROBLA SCHOOL DISTRICT (Continued) **U001616007**

Global Id: T0606700023
Action Type: Other
Date: 10/06/1986
Action: Leak Reported

Global Id: T0606700023
Action Type: Other
Date: 08/28/1986
Action: Leak Discovery

LUST:
Global Id: T0606700023
Status: Open - Case Begin Date
Status Date: 08/28/1986

Global Id: T0606700023
Status: Open - Site Assessment
Status Date: 02/08/1987

Global Id: T0606700023
Status: Completed - Case Closed
Status Date: 04/03/1987

LUST REG 5:
Name: ROBLA SCHOOL DISTRICT
Address: 5248 ROSE ST
City: SACRAMENTO
Region: 5
Status: Case Closed
Case Number: 340035
Case Type: Soil only
Substance: UNLEAD GASOLINE
Staff Initials: VJF
Lead Agency: Local
Program: LUST
MTBE Code: N/A

Sacramento Co. CS:
Name: ROBLA SCHOOL
Address: 5248 ROSE ST
City,State,Zip: SACRAMENTO, CA
State Site Number: R124
Lead Staff: None assigned, H.
Lead Agency: HM
Remedial Action Taken: NO
Substance: Automotive(motor gasoline and additives)
Date Reported: Not reported
Facility Id: RO0001024
Case Type: Not reported
Case Closed: Y
Date Closed: Not reported
Case Type: Not reported
Substance: Automotive(motor gasoline and additives)

ROBLA SCHOOL DISTRICT (Continued) **U001616007**

HIST UST:

Name:	ROBLA SCHOOL DISTRICT
Address:	5248 ROSE STREET
City,State,Zip:	SACRAMENTO, CA 95838
File Number:	00020049
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00020049.pdf
Region:	STATE
Facility ID:	00000008955
Facility Type:	Other
Other Type:	SCHOOL DISTRICT
Contact Name:	PAUL E. RAHE, SUPERINTENDENT
Telephone:	9169911728
Owner Name:	ROBLA SCHOOL DISTRICT
Owner Address:	5248 ROSE STREET
Owner City,St,Zip:	SACRAMENTO, CA 95838
Total Tanks:	0001
Tank Num:	001
Container Num:	1
Year Installed:	1936
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	PREMIUM
Container Construction Thickness:	Not reported
Leak Detection:	None

Click here for Geo Tracker PDF:

HIST CORTESE:

edr_fname:	ROBLA SCHOOL DISTRICT
edr_fadd1:	5248 ROSE
City,State,Zip:	SACRAMENTO, CA 95838
Region:	CORTESE
Facility County Code:	34
Reg By:	LTNKA
Reg Id:	340035

Sacramento Co. ML:

Name:	ROBLA SCHOOL
Address:	5248 ROSE ST
City,State,Zip:	SACRAMENTO, CA 95838
Facility Id:	Not reported
Facility Status:	Not reported
FD:	Not reported
Billing Codes BP:	I
Billing Codes UST:	Not reported
WG Bill Code:	Not reported
Target Property Bill Cod:	Not reported
Food Bill Code:	Not reported
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported

ROBLA SCHOOL DISTRICT (Continued) **U001616007**

Number of Tanks:	Not reported
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

CERS:

Name:	ROBLA SCHOOL DISTRICT
Address:	5248 ROSE ST
City,State,Zip:	SACRAMENTO, CA 95838
Site ID:	230422
CERS ID:	T0606700023
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	VERA FISCHER - CENTRAL VALLEY RWQCB (REGION 5S)
Entity Title:	Not reported
Affiliation Address:	11020 SUN CENTER DRIVE #200
Affiliation City:	RANCHO CORDOVA
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

A2 **WILLIAM STOLK** **Sacramento Co. ML** **S109612678**
SSE **5209 RIO LINDA BL** **N/A**
< 1/8 **RIO LINDA, CA 95673**
0.038 mi.
199 ft. **Site 1 of 2 in cluster A**

Relative:
Higher

Actual:
43 ft.

Sacramento Co. ML:

Name:	WILLIAM STOLK
Address:	5209 RIO LINDA BL
City,State,Zip:	RIO LINDA, CA 95673
Facility Id:	Not reported
Facility Status:	Inactive. Included on a listing no longer updated.
FD:	C
Billing Codes BP:	Out of Business
Billing Codes UST:	No Tanks
WG Bill Code:	Oil Changed by Outside Company-No Fee
Target Property Bill Cod:	51
Food Bill Code:	51
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	0
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

A3
SSE
< 1/8
0.041 mi.
214 ft.

SMITTY S SERVICE GAS OIL & GROCERIES
5209 RIO LINDA BLVD
SACRAMENTO, CA

Site 2 of 2 in cluster A

EDR Hist Auto **1009021294**
N/A

Relative:
Higher

Actual:
43 ft.

EDR Hist Auto

Year:	Name:	Type:
1956	SMITTY S SERVICE GAS OIL & GROC	GASOLINE STATIONS

4
SSW
1/8-1/4
0.208 mi.
1097 ft.

P. PULSIFER
651 PINEDALE AV
SACRAMENTO, CA 95838

Sacramento Co. ML **S105271118**
N/A

Relative:
Higher

Actual:
42 ft.

Sacramento Co. ML:

Name:	P. PULSIFER
Address:	651 PINEDALE AV
City,State,Zip:	SACRAMENTO, CA 95838
Facility Id:	U01912
Facility Status:	Inactive. Included on a listing no longer updated.
FD:	U
Billing Codes BP:	Out of Business
Billing Codes UST:	No Tanks
WG Bill Code:	Oil Changed by Outside Company-No Fee
Target Property Bill Cod:	51
Food Bill Code:	51
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	0
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

5
SW
1/8-1/4
0.248 mi.
1310 ft.

544 CLAIRE AVE
SACRAMENTO, CA 95838

RCRA NonGen / NLR **1025867771**
CAL000332622

Relative:
Higher

Actual:
38 ft.

RCRA NonGen / NLR:

6 SSW 1/2-1 0.780 mi. 4119 ft. | **NORWOOD JUNIOR HIGH**
NORWOOD AVENUE/MAIN AVENUE
SACRAMENTO, CA 95838 | **ENVIROSTOR SCH CERS** | **S118756798 N/A**

Relative: Higher

Actual: 40 ft.

ENVIROSTOR:

Name:	NORWOOD JUNIOR HIGH
Address:	NORWOOD AVENUE/MAIN AVENUE
City,State,Zip:	SACRAMENTO, CA 95838
Facility ID:	34970009
Status:	No Action Required
Status Date:	12/08/2000
Site Code:	104175
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	24.5
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Charlie Ridenour
Supervisor:	Charles Ridenour
Division Branch:	Northern California Schools & Santa Susana
Assembly:	07
Senate:	06
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.65388
Longitude:	-121.4563
APN:	NONE SPECIFIED
Past Use:	* NATIONAL SECURITY/INTERNATIONAL AFFAIRS
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	GRANT JOINT UNION HIGH SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	GRANT JT USD-NORWOOD JUR HIGH
Alias Type:	Alternate Name
Alias Name:	NORWOOD JUNIOR HIGH SCHOOL
Alias Type:	Alternate Name
Alias Name:	104175
Alias Type:	Project Code (Site Code)
Alias Name:	34970009
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	12/08/2000
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	11/13/2000
Comments:	Not reported

NORWOOD JUNIOR HIGH (Continued) **S118756798**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	02/26/2001
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Name:	NORWOOD JUNIOR HIGH
Address:	NORWOOD AVENUE/MAIN AVENUE
City,State,Zip:	SACRAMENTO, CA 95838
Facility ID:	34970009
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	24.5
National Priorities List:	NO
Cleanup Oversight Agencies:	DTSC
Lead Agency:	DTSC
Lead Agency Description:	* DTSC
Project Manager:	Charlie Ridenour
Supervisor:	Charles Ridenour
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104175
Assembly:	07
Senate:	06
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	12/08/2000
Restricted Use:	NO
Funding:	School District
Latitude:	38.65388
Longitude:	-121.4563
APN:	NONE SPECIFIED
Past Use:	* NATIONAL SECURITY/INTERNATIONAL AFFAIRS
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	GRANT JOINT UNION HIGH SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	GRANT JT USD-NORWOOD JUR HIGH
Alias Type:	Alternate Name
Alias Name:	NORWOOD JUNIOR HIGH SCHOOL
Alias Type:	Alternate Name
Alias Name:	104175
Alias Type:	Project Code (Site Code)
Alias Name:	34970009

NORWOOD JUNIOR HIGH (Continued) **S118756798**

Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 12/08/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 11/13/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/26/2001
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

CERS:
Name: NORWOOD JUNIOR HIGH
Address: NORWOOD AVENUE/MAIN AVENUE
City,State,Zip: SACRAMENTO, CA 95838
Site ID: 371423
CERS ID: 34970009
CERS Description: School Investigation

Affiliation:
Affiliation Type Desc: Lead Project Manager
Entity Name: CHARLIE RIDENOUR
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: SACRAMENTO
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Supervisor
Entity Name: Charles Ridenour
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported

NORWOOD JUNIOR HIGH (Continued) **S118756798**

Affiliation Phone: Not reported

---

7 SSE 1/2-1 0.912 mi. 4817 ft. | **GATEWAY COMMUNITY CHARTERS PROPOSED NEW CHARTER SC 4525 MAY STREET SACRAMENTO, CA 95838** | **ENVIROSTOR SCH** | **S118757253 N/A**

Relative: Higher

Actual: 43 ft.

ENVIROSTOR:

Name:	GATEWAY COMMUNITY CHARTERS PROPOSED NEW CHARTER SCHOOL
Address:	4525 MAY STREET
City,State,Zip:	SACRAMENTO, CA 95838
Facility ID:	60001750
Status:	No Action Required
Status Date:	08/20/2012
Site Code:	104705
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	19.2
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Mellan Songco
Supervisor:	Juan Koponen
Division Branch:	Northern California Schools & Santa Susana
Assembly:	05
Senate:	06
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.65033
Longitude:	-121.4451
APN:	237-0081-001
Past Use:	NONE
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	No Contaminants found
Potential Description:	NMA
Alias Name:	237-0081-001
Alias Type:	APN
Alias Name:	104705
Alias Type:	Project Code (Site Code)
Alias Name:	60001750
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	07/13/2012
Comments:	On July 13, 2012, DTSC conducted a site visit. No structures or pole-mounted transformers were observed during the site visit; the site was vacant.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo

GATEWAY COMMUNITY CHARTERS PROPOSED NEW CHARTER SCHOOL (Continued) **S118757253**

Completed Date:	08/20/2012
Comments:	On August 20, 2012, DTSC Schools Unit issued the CRU letter
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	08/07/2012
Comments:	On August 7, 2012, DTSC issued the approval letter for the revised Phase I ESA with a no action determination.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Name:	GATEWAY COMMUNITY CHARTERS PROPOSED NEW CHARTER SCHOOL
Address:	4525 MAY STREET
City,State,Zip:	SACRAMENTO, CA 95838
Facility ID:	60001750
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	19.2
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Mellan Songco
Supervisor:	Juan Koponen
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104705
Assembly:	05
Senate:	06
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	08/20/2012
Restricted Use:	NO
Funding:	School District
Latitude:	38.65033
Longitude:	-121.4451
APN:	237-0081-001
Past Use:	NONE
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	No Contaminants found
Potential Description:	NMA
Alias Name:	237-0081-001
Alias Type:	APN
Alias Name:	104705
Alias Type:	Project Code (Site Code)
Alias Name:	60001750

GATEWAY COMMUNITY CHARTERS PROPOSED NEW CHARTER SCHOOL (Continued) **S118757253**

Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 07/13/2012
Comments: On July 13, 2012, DTSC conducted a site visit. No structures or pole-mounted transformers were observed during the site visit; the site was vacant.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 08/20/2012
Comments: On August 20, 2012, DTSC Schools Unit issued the CRU letter

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 08/07/2012
Comments: On August 7, 2012, DTSC issued the approval letter for the revised Phase I ESA with a no action determination.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Count: 2 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
SACRAMENTO	S106230367	SACRAMENTO TRAP SHOOT RANGE**	DEL PASO REGIONAL PARK		CPS-SLIC
SACRAMENTO	S121673625	SHRA PROJECT RIO LINDA BLVD	RIO LINDA BLVD	95673	CIWQS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/25/2019	Source: EPA
Date Data Arrived at EDR: 11/07/2019	Telephone: N/A
Date Made Active in Reports: 11/20/2019	Last EDR Contact: 01/03/2020
Number of Days to Update: 13	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1 Telephone 617-918-1143	EPA Region 6 Telephone: 214-655-6659
EPA Region 3 Telephone 215-814-5418	EPA Region 7 Telephone: 913-551-7247
EPA Region 4 Telephone 404-562-8033	EPA Region 8 Telephone: 303-312-6774
EPA Region 5 Telephone 312-886-6686	EPA Region 9 Telephone: 415-947-4246
EPA Region 10 Telephone 206-553-8665	

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/25/2019	Source: EPA
Date Data Arrived at EDR: 11/07/2019	Telephone: N/A
Date Made Active in Reports: 11/20/2019	Last EDR Contact: 01/03/2020
Number of Days to Update: 13	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: N/A
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/13/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 08/26/2019
Number of Days to Update: 6

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/07/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/19/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 08/26/2019
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/19/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 08/26/2019
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 14

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/29/2019
Date Data Arrived at EDR: 07/31/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 69

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/29/2019
Date Data Arrived at EDR: 07/31/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 69

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/12/2019
Date Data Arrived at EDR: 08/13/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 57

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/12/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/16/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 07/02/2019
Date Data Arrived at EDR: 10/16/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 8

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 79

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/12/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 08/27/2019
Date Data Arrived at EDR: 08/28/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 75

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/11/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 79

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/12/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/16/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 79

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/29/2019
Date Data Arrived at EDR: 07/31/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 69

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/23/2019
Date Data Arrived at EDR: 09/24/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/03/2019
Date Data Arrived at EDR: 06/04/2019
Date Made Active in Reports: 08/26/2019
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 59

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 34

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/07/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/28/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 11/01/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/29/2019
Date Data Arrived at EDR: 07/31/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 69

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/16/2019
Date Made Active in Reports: 09/24/2019
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 09/24/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/22/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/02/2019
Date Made Active in Reports: 10/11/2019
Number of Days to Update: 70

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/22/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/29/2019
Date Data Arrived at EDR: 08/30/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 60

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2019
Date Data Arrived at EDR: 06/26/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 89

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/06/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 05/15/2019
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 58

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 05/15/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 79

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/11/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/07/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/23/2019
Date Data Arrived at EDR: 09/24/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/08/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 11/16/2018
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 370

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 09/30/2018
Date Data Arrived at EDR: 04/24/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 106

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/23/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/21/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 14

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/11/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/07/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/20/2019
Date Data Arrived at EDR: 06/20/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 49

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/06/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/31/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 85

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2019
Date Data Arrived at EDR: 10/09/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 72

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/02/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/06/2019
Next Scheduled EDR Contact: 01/19/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/21/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 82

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/15/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/27/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 76

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/27/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 09/17/2019
Date Data Arrived at EDR: 09/18/2019
Date Made Active in Reports: 12/03/2019
Number of Days to Update: 76

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2019
Date Data Arrived at EDR: 09/10/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 37

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/12/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 12/03/2019
Number of Days to Update: 90

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/10/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 10/06/2019
Date Data Arrived at EDR: 10/08/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 10/08/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/19/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 83

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/23/2019
Date Data Arrived at EDR: 09/24/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 43

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 10/31/2019
Date Data Arrived at EDR: 11/01/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 40

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/12/2019
Number of Days to Update: 62

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 09/27/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 37

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 08/28/2019
Date Data Arrived at EDR: 08/30/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 60

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 59

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/18/2019
Next Scheduled EDR Contact: 12/30/2019
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/22/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 66

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/30/2019
Next Scheduled EDR Contact: 02/02/2020
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/16/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/07/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 05/29/2019
Date Made Active in Reports: 07/22/2019
Number of Days to Update: 54

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/11/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/19/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/19/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/07/2019
Date Data Arrived at EDR: 10/08/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/08/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/12/2019
Date Data Arrived at EDR: 08/13/2019
Date Made Active in Reports: 10/16/2019
Number of Days to Update: 64

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/12/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/16/2019
Date Data Arrived at EDR: 09/18/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 11/18/2019
Number of Days to Update: 90

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/11/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/22/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/02/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 10/03/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/02/2019
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/10/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 51

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/02/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 08/05/2019
Date Data Arrived at EDR: 08/07/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 63

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 08/23/2019
Date Made Active in Reports: 10/22/2019
Number of Days to Update: 60

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/28/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 43

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/12/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 49

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/28/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/08/2019
Date Data Arrived at EDR: 10/10/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 62

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/08/2019
Date Data Arrived at EDR: 07/10/2019
Date Made Active in Reports: 09/20/2019
Number of Days to Update: 72

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 10/30/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/06/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 63

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/16/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/15/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/22/2019
Date Data Arrived at EDR: 07/23/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 65

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 09/26/2019
Date Data Arrived at EDR: 10/04/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 34

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/02/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 10/16/2019
Date Made Active in Reports: 12/12/2019
Number of Days to Update: 57

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/16/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/09/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/18/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/15/2019
Date Data Arrived at EDR: 07/17/2019
Date Made Active in Reports: 08/05/2019
Number of Days to Update: 19

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/09/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/22/2019
Date Data Arrived at EDR: 08/26/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 64

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/20/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 44

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 08/21/2019
Date Data Arrived at EDR: 09/03/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 58

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/25/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 09/30/2019
Number of Days to Update: 62

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/30/2019
Date Data Arrived at EDR: 10/30/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 42

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 07/10/2019
Date Data Arrived at EDR: 08/07/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 63

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/10/2019
Date Data Arrived at EDR: 08/09/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 61

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/10/2019
Date Data Arrived at EDR: 08/06/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/05/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/05/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 61

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 08/06/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 37

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/23/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/07/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/08/2019
Number of Days to Update: 38

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/23/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 07/16/2019
Date Data Arrived at EDR: 07/16/2019
Date Made Active in Reports: 09/24/2019
Number of Days to Update: 70

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 08/29/2019
Date Data Arrived at EDR: 08/30/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 60

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 10/16/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/02/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 67

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/05/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 07/30/2019
Date Data Arrived at EDR: 08/02/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 67

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/28/2019
Date Data Arrived at EDR: 08/30/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 60

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 06/18/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 29

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 36

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 07/18/2019
Date Data Arrived at EDR: 07/18/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 70

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/28/2019
Next Scheduled EDR Contact: 01/27/2020
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/29/2019
Date Data Arrived at EDR: 09/03/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 64

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 58

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 08/12/2019
Date Data Arrived at EDR: 08/14/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 64

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/17/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 05/29/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 09/30/2019
Number of Days to Update: 63

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/21/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/07/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 51

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/21/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 07/26/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 09/25/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 30

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 07/26/2019
Date Data Arrived at EDR: 07/31/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 69

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/14/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 08/05/2019
Number of Days to Update: 83

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/11/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/02/2019
Next Scheduled EDR Contact: 01/20/2020
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 05/01/2019
Date Made Active in Reports: 06/21/2019
Number of Days to Update: 51

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/09/2019
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/18/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

RIO LINDA
5330 RIO LINDA
SACRAMENTO, CA 95838

TARGET PROPERTY COORDINATES

Latitude (North):	38.664272 - 38˚ 39’ 51.38’’
Longitude (West):	121.448573 - 121˚ 26’ 54.86’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	634980.4
UTM Y (Meters):	4280456.0
Elevation:	38 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5629066 RIO LINDA, CA
Version Date:	2012

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

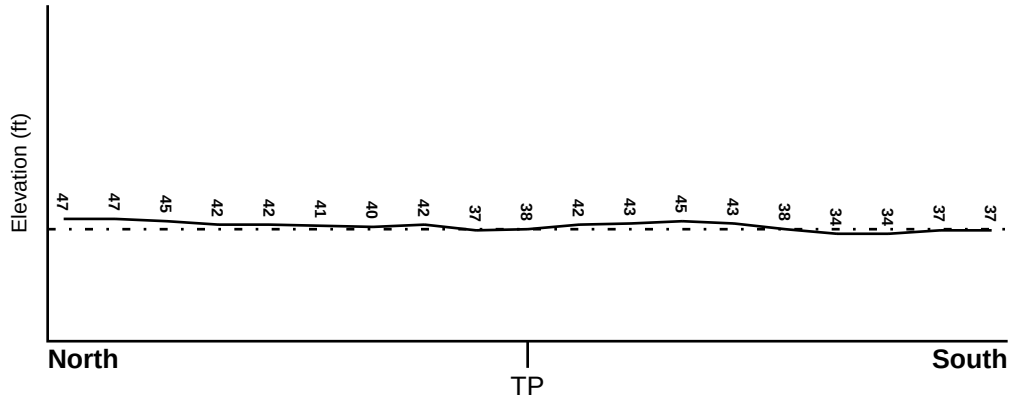
TOPOGRAPHIC INFORMATION

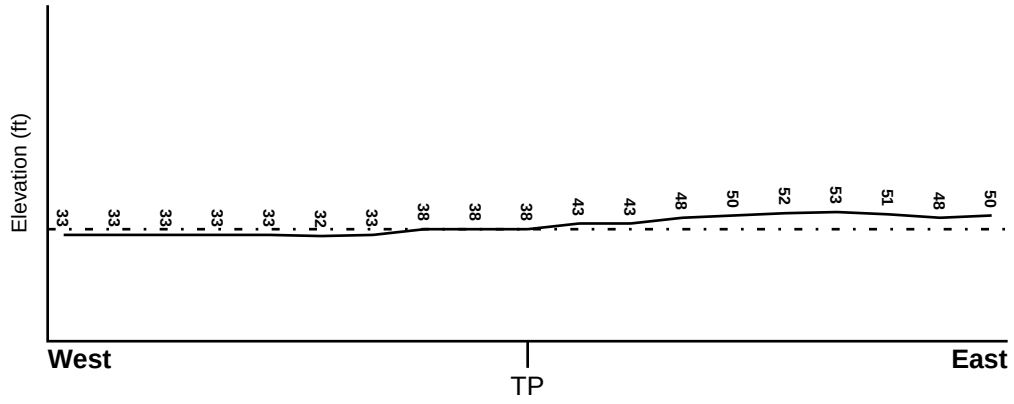
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 38 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06067C0062H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06067C0066H	FEMA FIRM Flood data
06067C0064J	FEMA FIRM Flood data
0602660005E	FEMA Q3 Flood data
06067C0068H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
RIO LINDA	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

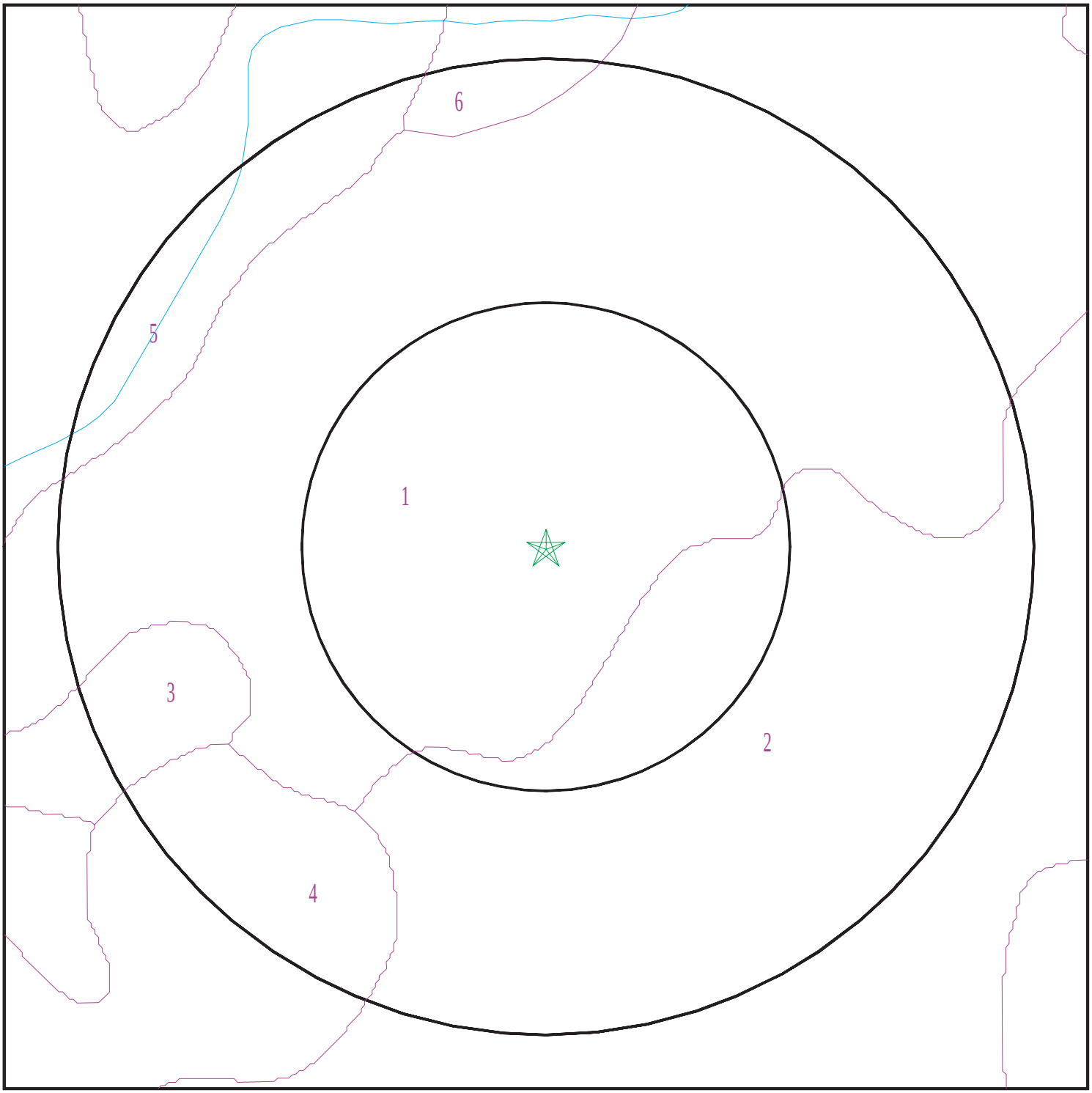
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5925634.11s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Rio Linda	CLIENT:	Kim Lush
ADDRESS:	5330 Rio Linda Sacramento CA 95838	CONTACT:	Andrew Lush
		INQUIRY #:	5925634.11s
LAT/LONG:	38.664272 / 121.448573	DATE:	January 06, 2020 6:58 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: MADERA

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	14 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
3	29 inches	59 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Map ID: 2

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
2	12 inches	29 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
3	29 inches	35 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
4	35 inches	59 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
5	59 inches	66 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1

Soil Map ID: 3

Soil Component Name: GALT

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	12 inches	31 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
3	31 inches	59 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
2	12 inches	29 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
3	29 inches	35 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
4	35 inches	59 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
5	59 inches	66 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 5

Soil Component Name: COSUMNES

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
2	7 inches	20 inches	stratified silty clay loam to clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
3	20 inches	42 inches	stratified clay loam to clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
4	42 inches	59 inches	stratified clay loam to clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6

Soil Map ID: 6

Soil Component Name: LIVEOAK

Soil Surface Texture: sandy clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	18 inches	48 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
3	48 inches	59 inches	stratified gravelly loamy coarse sand to sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000189778	1/2 - 1 Mile ENE
C7	USGS40000189811	1/2 - 1 Mile NW
D9	USGS40000189698	1/2 - 1 Mile SSE
D10	USGS40000189699	1/2 - 1 Mile SSE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

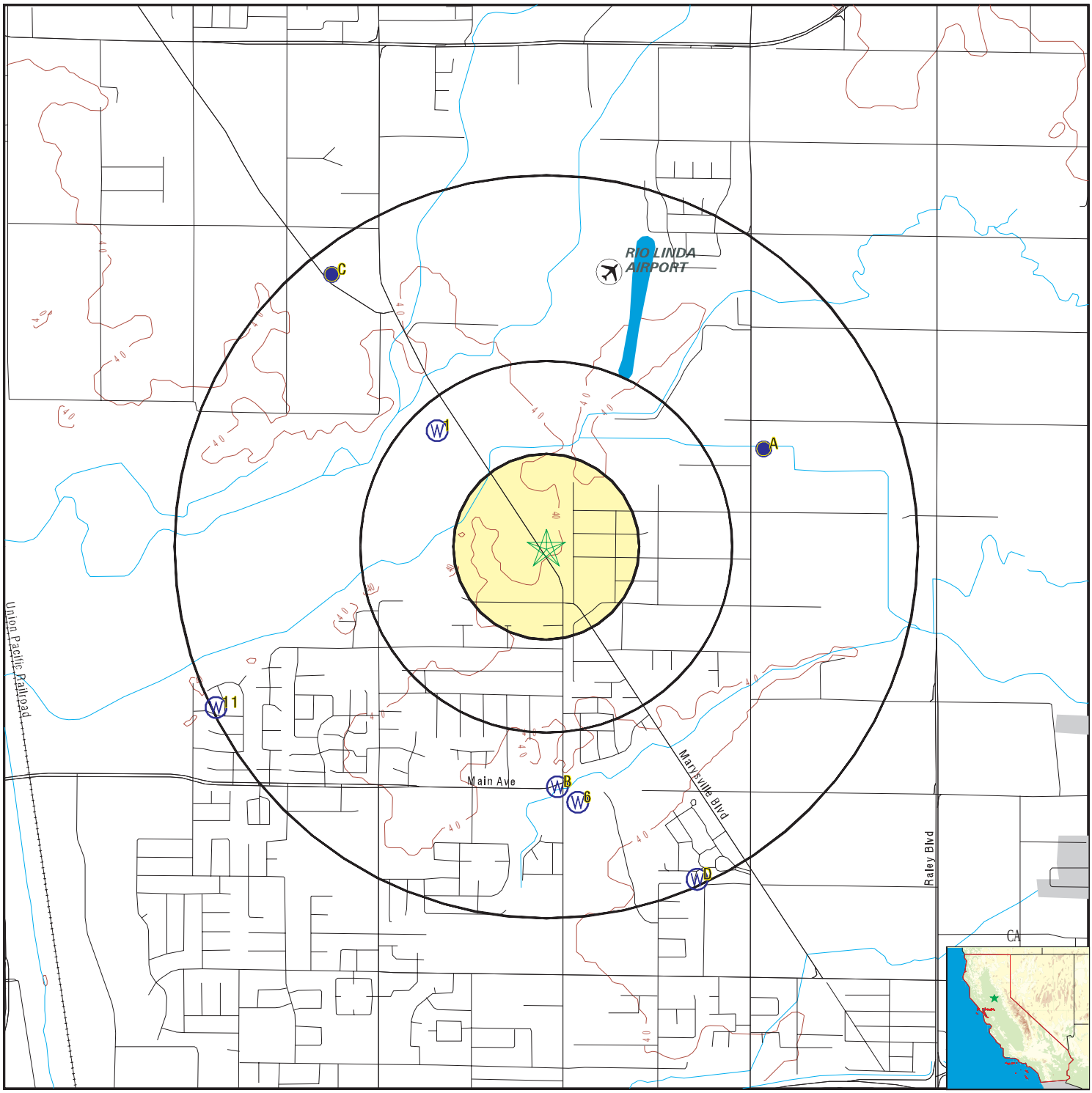
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CADWR8000038746	1/4 - 1/2 Mile NW
A3	8985	1/2 - 1 Mile ENE
B4	18575	1/2 - 1 Mile South
B5	8987	1/2 - 1 Mile South
6	CADWR8000038707	1/2 - 1 Mile South
C8	9869	1/2 - 1 Mile NW
11	CADWR8000038718	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 5925634.11s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Airports
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME: Rio Linda	CLIENT: Kim Lush
ADDRESS: 5330 Rio Linda Sacramento CA 95838	CONTACT: Andrew Lush
LAT/LONG: 38.664272 / 121.448573	INQUIRY #: 5925634.11s DATE: January 06, 2020 6:58 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number
1 **NW** **1/4 - 1/2 Mile** **Lower**	**CA WELLS**	**CADWR8000038746**

State Well #:	10N05E32Q002M	Station ID:	13655
Well Name:	Not Reported	Well Use:	Irrigation
Well Type:	Unknown	Well Depth:	0
Basin Name:	North American	Well Completion Rpt #:	Not Reported

---

A2 **ENE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000189778**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	009N005E04B001M	Type:	Well
Description:	Not Reported	HUC:	18020111
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19671114	Well Depth:	412
Well Depth Units:	ft	Well Hole Depth:	430
Well Hole Depth Units:	ft		

A3 **ENE** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**8985**

Seq:	8985	Prim sta c:	09N/05E-04B01 M
Frds no:	3410020050	County:	34
District:	09	User id:	TEN
System no:	3410020	Water type:	G
Source nam:	WELL 154	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	384006.0	Longitude:	1212612.0
Precision:	3	Status:	AR
Comment 1:	AT DRY CREEK RD & NEAL RD.	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3410020	System nam:	Sacramento, City Of
Hqname:	SACRAMENTO CITY-DIV WTR & SWR	Address:	1391 35th Avenue
City:	Sacramento	State:	Ca
Zip:	95822	Zip ext:	Not Reported
Pop serv:	374600	Connection:	120339
Area serve:	SACRAMENTO MAIN		
Sample date:	03-NOV-15	Finding:	9.5
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	15-OCT-15	Finding:	9.6

Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	15-OCT-15	Finding:	1550.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	15-OCT-15	Finding:	0.15
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	15-OCT-15	Finding:	1.6
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	19-FEB-15	Finding:	8.9
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	25-MAR-14	Finding:	3.9
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	25-MAR-14	Finding:	31.
Chemical:	VANADIUM	Report units:	UG/L
Dlr:	3.		
Sample date:	25-MAR-14	Finding:	260.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	12.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	1.38
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	1.16
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	1.83
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	0.506
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	0.252
Chemical:	RA-226 OR TOTAL RA BY 903.0 C.E.	Report units:	PCI/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	0.418
Chemical:	RADIUM, TOTAL, MDA95-NTNC ONLY, BY 903.0		
Report units:	PCI/L	Dlr:	0.
Sample date:	25-MAR-14	Finding:	1.
Chemical:	COLOR	Report units:	UNITS
Dlr:	0.		

Sample date:	25-MAR-14	Finding:	376.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	7.1
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	27.9
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	9.5
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	25-MAR-14	Finding:	0.18
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	25-MAR-14	Finding:	8.7
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	25-MAR-14	Finding:	0.22
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	25-MAR-14	Finding:	1960.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	25-MAR-14	Finding:	1.8
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	26.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	18.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	23.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	130.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	7.97
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	25-MAR-14	Finding:	140.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		

Map ID Direction Distance Elevation	Database	EDR ID Number
B4 **South** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**18575**

Seq:	18575	Prim sta c:	3410020-056
Frds no:	3410020056	County:	34
District:	09	User id:	TEN
System no:	3410020	Water type:	G
Source nam:	WELL 153A	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	383918.0	Longitude:	1212650.0
Precision:	2	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3410020	System nam:	Sacramento, City Of
Hqname:	SACRAMENTO CITY-DIV WTR & SWR	Address:	1391 35th Avenue
City:	Sacramento	State:	Ca
Zip:	95822	Zip ext:	Not Reported
Pop serv:	374600	Connection:	120339
Area serve:	SACRAMENTO MAIN		

Sample date:	10-JUL-17	Finding:	6.5
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		

Sample date:	09-MAY-17	Finding:	118.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		

Sample date:	09-MAY-17	Finding:	1.1
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	09-MAY-17	Finding:	11.4
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		

Sample date:	09-MAY-17	Finding:	7.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		

Sample date:	09-MAY-17	Finding:	251.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		

Sample date:	09-MAY-17	Finding:	16.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	09-MAY-17	Finding:	9.6
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	09-MAY-17	Finding:	29.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		

Sample date:	09-MAY-17	Finding:	1.
Chemical:	COLOR	Report units:	UNITS
Dlr:	0.		
Sample date:	09-MAY-17	Finding:	310.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	09-MAY-17	Finding:	7.8
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	09-MAY-17	Finding:	97.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	09-MAY-17	Finding:	1.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	09-MAY-17	Finding:	92.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	09-MAY-17	Finding:	34.9
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	09-MAY-17	Finding:	6.2
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	09-MAY-17	Finding:	3.5
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	10-APR-17	Finding:	0.12
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	10-APR-17	Finding:	7.
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	09-JAN-17	Finding:	7.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	09-JAN-17	Finding:	7.5
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	17-OCT-16	Finding:	7.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	11-OCT-16	Finding:	7.
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	11-OCT-16	Finding:	1.
Chemical:	NITRATE (AS N)	Report units:	MG/L

Dlr:	0.4		
Sample date:	11-OCT-16	Finding:	0.2
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	26-JUL-16	Finding:	1.1
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-16	Finding:	3.9
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	26-JUL-16	Finding:	13.7
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-16	Finding:	0.2
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	26-JUL-16	Finding:	6.5
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	26-JUL-16	Finding:	1.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	26-JUL-16	Finding:	7.5
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	26-JUL-16	Finding:	24.7
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	09-JUL-15	Finding:	6.7
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	09-JUL-15	Finding:	8.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	07-APR-15	Finding:	0.26
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	06-JAN-15	Finding:	0.24
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	16-DEC-14	Finding:	6.6
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	14-OCT-14	Finding:	3.4
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

Sample date:	14-OCT-14	Finding:	8.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	14-OCT-14	Finding:	0.13
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	08-SEP-14	Finding:	3.6
Chemical:	ARSENIC	Report units:	UG/L
Dlr:	2.		
Sample date:	08-SEP-14	Finding:	239.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	3.5
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	08-SEP-14	Finding:	9.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	08-SEP-14	Finding:	790.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	08-SEP-14	Finding:	0.21
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	08-SEP-14	Finding:	6.3
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	08-SEP-14	Finding:	34.5
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	2.3
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	8.8
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	14.8
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	86.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	90.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	90.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L

Dlr:	0.		
Sample date:	08-SEP-14	Finding:	7.4
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	305.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	1.
Chemical:	COLOR	Report units:	UNITS
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	11.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	16.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	110.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	94.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	7.9
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	08-SEP-14	Finding:	28.9
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	08-JUL-14	Finding:	6.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	08-APR-14	Finding:	5.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	05-MAR-14	Finding:	4.e-002
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	15-OCT-13	Finding:	3.3
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-OCT-12	Finding:	1.62
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-OCT-12	Finding:	1.25
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		

Sample date:	10-OCT-12	Finding:	1.86
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-OCT-12	Finding:	0.4
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	10-OCT-12	Finding:	3.5
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	10-OCT-12	Finding:	0.14
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		

B5
South **CA WELLS** **8987**
1/2 - 1 Mile
Lower

Seq:	8987	Prim sta c:	09N/05E-08A02 M
Frds no:	3410020049	County:	34
District:	09	User id:	TEN
System no:	3410020	Water type:	G
Source nam:	WELL 153 - DESTROYED	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	383918.0	Longitude:	1212648.0
Precision:	3	Status:	DS
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3410020	System nam:	Sacramento, City Of
Hqname:	SACRAMENTO CITY-DIV WTR & SWR	Address:	1391 35th Avenue
City:	Sacramento	State:	Ca
Zip:	95822	Zip ext:	Not Reported
Pop serv:	374600	Connection:	120339
Area serve:	SACRAMENTO MAIN		

6
South **CA WELLS** **CADWR8000038707**
1/2 - 1 Mile
Lower

State Well #:	Not Reported	Station ID:	52238
Well Name:	SAC-153A	Well Use:	Other
Well Type:	Single Well	Well Depth:	626
Basin Name:	North American	Well Completion Rpt #:	351635

C7
NW **FED USGS** **USGS40000189811**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	010N005E32L002M	Type:	Well

Description:	Not Reported	HUC:	18020111
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19791206	Well Depth:	575
Well Depth Units:	ft	Well Hole Depth:	585
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1979-12-06
Feet below surface:	64.00	Feet to sea level:	Not Reported
Note:	Not Reported		

C8
NW
1/2 - 1 Mile
Higher

CA WELLS 9869

Seq:	9869	Prim sta c:	10N/05E-32L02 M
Frds no:	3410018011	County:	34
District:	09	User id:	TEN
System no:	3410018	Water type:	G
Source nam:	WELL 10	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	384030.0	Longitude:	1212730.0
Precision:	3	Status:	AU
Comment 1:	MARYSVILLE BLVD NEAR E ST	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3410018	System nam:	Rio Linda Water District
Hqname:	Not Reported	Address:	P.O. Box 400
City:	Rio Linda	State:	CA
Zip:	95673	Zip ext:	Not Reported
Pop serv:	14750	Connection:	3948
Area serve:	RIO LINDA		

Sample date:	09-DEC-16	Finding:	14.
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		

D9
SSE
1/2 - 1 Mile
Higher

FED USGS USGS40000189698

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	009N005E09F001M	Type:	Well
Description:	Not Reported	HUC:	18020111
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19600810	Well Depth:	159
Well Depth Units:	ft	Well Hole Depth:	160
Well Hole Depth Units:	ft		

Map ID Direction Distance Elevation	Database	EDR ID Number
D10 **SSE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000189699**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	009N005E09F002M	Type:	Well
Description:	Not Reported	HUC:	18020111
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19730101	Well Depth:	244
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

11 **WSW** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR8000038718**

State Well #:	Not Reported	Station ID:	52242
Well Name:	SAC-164	Well Use:	Other
Well Type:	Single Well	Well Depth:	635
Basin Name:	North American	Well Completion Rpt #:	383797

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for SACRAMENTO County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for SACRAMENTO COUNTY, CA

Number of sites tested: 52

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.665 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.200 pCi/L	100%	0%	0%
Basement	8.350 pCi/L	50%	50%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

APPENDIX B-3
EDR AERIAL PHOTO REPORT

Rio Linda

5330 Rio Linda

Sacramento, CA 95838

Inquiry Number: 5925634.18

January 06, 2020

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

01/06/20

Site Name:

Rio Linda
5330 Rio Linda
Sacramento, CA 95838
EDR Inquiry # 5925634.18

Client Name:

Kim Lush
3706 Solomon Island Rd
West Sacramento, CA 95691
Contact: Andrew Lush

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1998	1"=500'	Acquisition Date: August 18, 1998	USGS/DOQQ
1993	1"=500'	Flight Date: May 23, 1993	USDA
1984	1"=500'	Flight Date: June 08, 1984	USDA
1972	1"=500'	Flight Date: June 28, 1972	USDA
1966	1"=500'	Flight Date: August 04, 1966	USGS
1964	1"=500'	Flight Date: May 19, 1964	USDA
1957	1"=500'	Flight Date: September 09, 1957	USDA
1947	1"=500'	Flight Date: July 28, 1947	USGS
1937	1"=500'	Flight Date: September 01, 1937	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

INQUIRY #: 5925634.18

YEAR: 2016

= 500'

N

EDR

INQUIRY #: 5925634.18
YEAR: 2012
= 500'
N
EDR

INQUIRY #: 5925634.18
YEAR: 2009
= 500'
N
EDR

INQUIRY #: 5925634.18
YEAR: 2006
= 500'
N
EDR

INQUIRY #: 5925634.18

YEAR: 1998

= 500'

N

EDR

INQUIRY #: 5925634.18

YEAR: 1993

= 500'

N

EDR

INQUIRY #: 5925634.18
YEAR: 1984
= 500'
N
EDR

INQUIRY #: 5925634.18

YEAR: 1972

= 500'

N

EDR

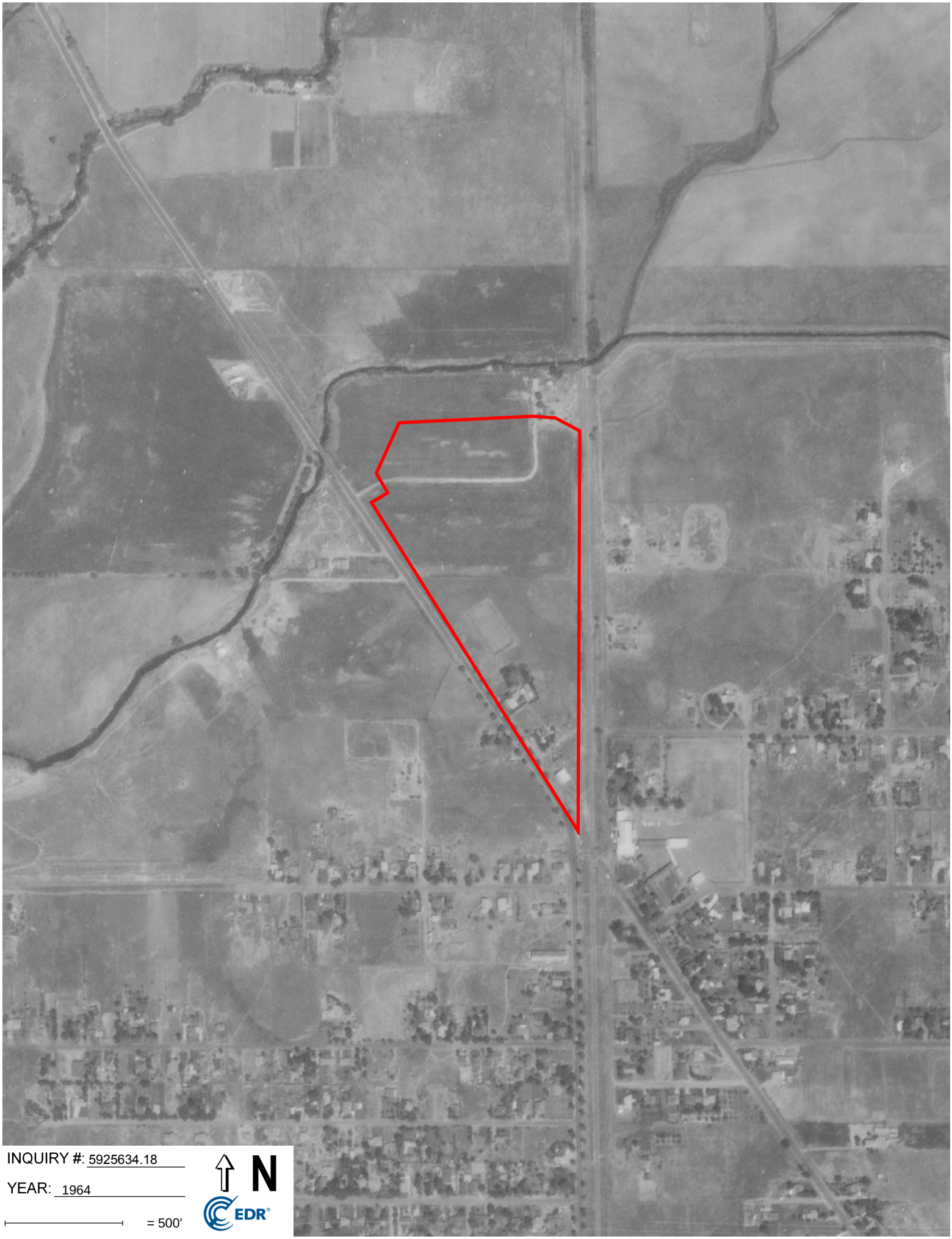
INQUIRY #: 5925634.18

YEAR: 1966

= 500'

N

EDR



INQUIRY #: 5925634.18

YEAR: 1964

= 500'

N

EDR

INQUIRY #: 5925634.18

YEAR: 1957

= 500'

N

EDR

INQUIRY #: 5925634.18

YEAR: 1947

= 500'

N

EDR

INQUIRY #: 5925634.18

YEAR: 1937

= 500'

N

EDR

APPENDIX B-4
EDR SANBORN MAP REPORT

Rio Linda

5330 Rio Linda

Sacramento, CA 95838

Inquiry Number: 5925634.12

January 06, 2020

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

01/06/20

Site Name:	Client Name:
Rio Linda	Kim Lush
5330 Rio Linda	3706 Solomon Island Rd
Sacramento, CA 95838	West Sacramento, CA 95691
EDR Inquiry # 5925634.12	Contact: Andrew Lush

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Kim Lush were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 78F9-498A-A01A

PO # NA

Project 5240-5370 Rio Linda Boulevard

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 78F9-498A-A01A

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Kim Lush (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

APPENDIX B-5
EDR TOPOGRAPHIC MAP REPORT

Rio Linda

5330 Rio Linda

Sacramento, CA 95838

Inquiry Number: 5925634.13

January 06, 2020

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

01/06/20

Site Name:	Client Name:
Rio Linda	Kim Lush
5330 Rio Linda	3706 Solomon Island Rd
Sacramento, CA 95838	West Sacramento, CA 95691
EDR Inquiry # 5925634.13	Contact: Andrew Lush

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Kim Lush were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	NA	**Latitude:**	38.664272 38° 39' 51" North
Project:	5240-5370 Rio Linda Boulevar(	**Longitude:**	-121.448573 -121° 26' 55" West
		UTM Zone:	Zone 10 North
		UTM X Meters:	634976.98
		UTM Y Meters:	4280663.41
		Elevation:	38.00' above sea level

Maps Provided:

2012	1911
1992	1902
1980	1893
1975	1892
1967	1891
1954	
1951	
1950	

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

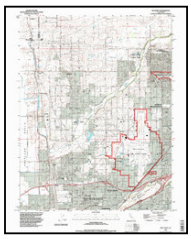
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

Rio Linda
2012
7.5-minute, 24000

1992 Source Sheets



Rio Linda
1992
7.5-minute, 24000
Aerial Photo Revised 1992

1980 Source Sheets

Rio Linda
1980
7.5-minute, 24000
Aerial Photo Revised 1978

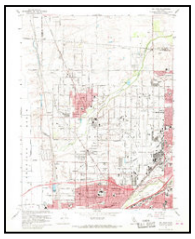
1975 Source Sheets

Rio Linda
1975
7.5-minute, 24000
Aerial Photo Revised 1975

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1967 Source Sheets



Rio Linda
1967
7.5-minute, 24000
Aerial Photo Revised 1966

1954 Source Sheets

Fair Oaks
1954
15-minute, 62500

1951 Source Sheets

Rio Linda
1951
7.5-minute, 24000
Aerial Photo Revised 1947

1950 Source Sheets

Rio Linda
1950
7.5-minute, 24000
Aerial Photo Revised 1947

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1911 Source Sheets

Arcade
1911
7.5-minute, 31680

1902 Source Sheets

Fairoaks
1902
15-minute, 62500

1893 Source Sheets

Sacramento
1893
30-minute, 125000

1892 Source Sheets

Sacramento
1892
30-minute, 125000

Topo Sheet Key

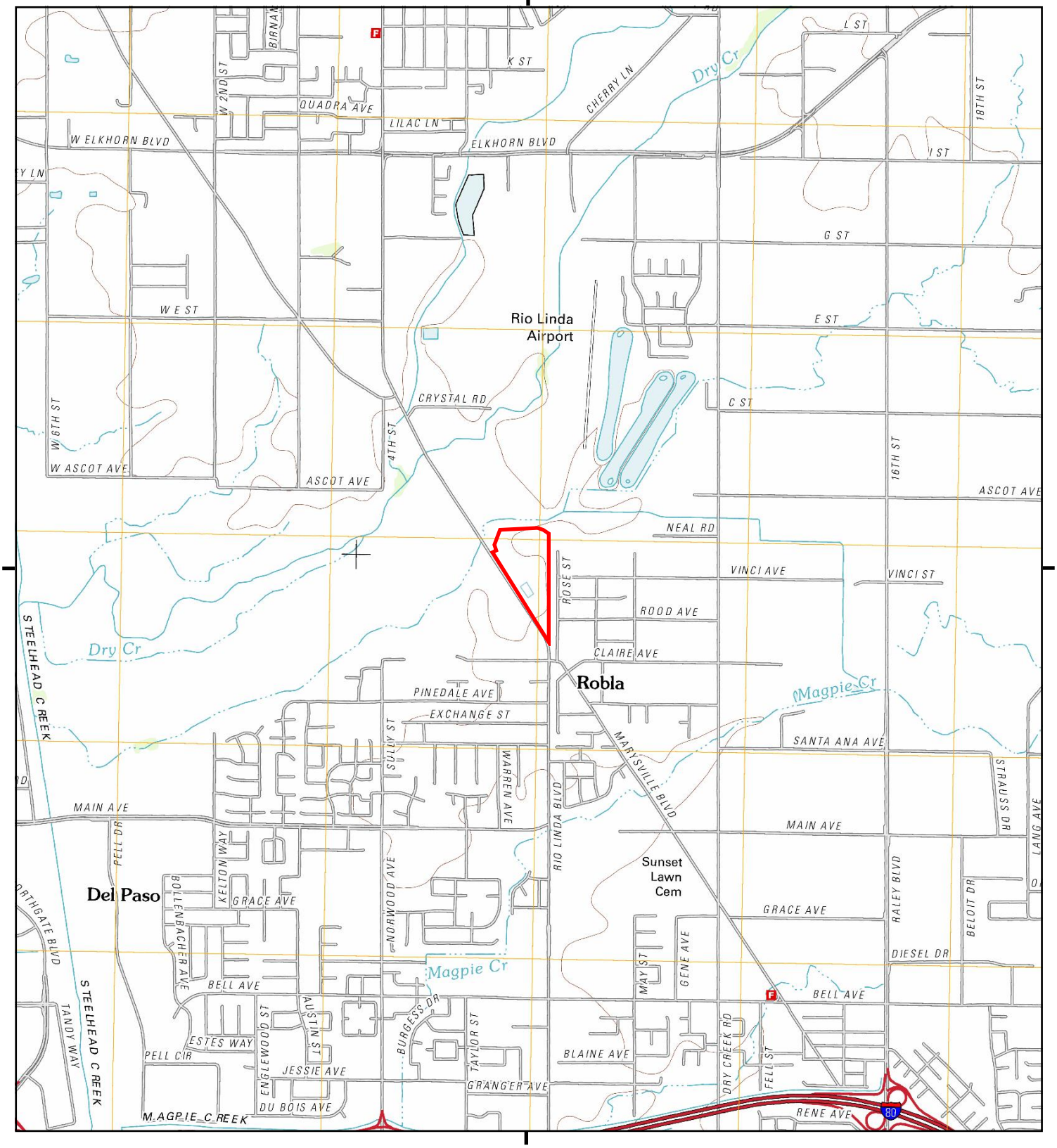
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1891 Source Sheets

Sacramento
1891
30-minute, 125000

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

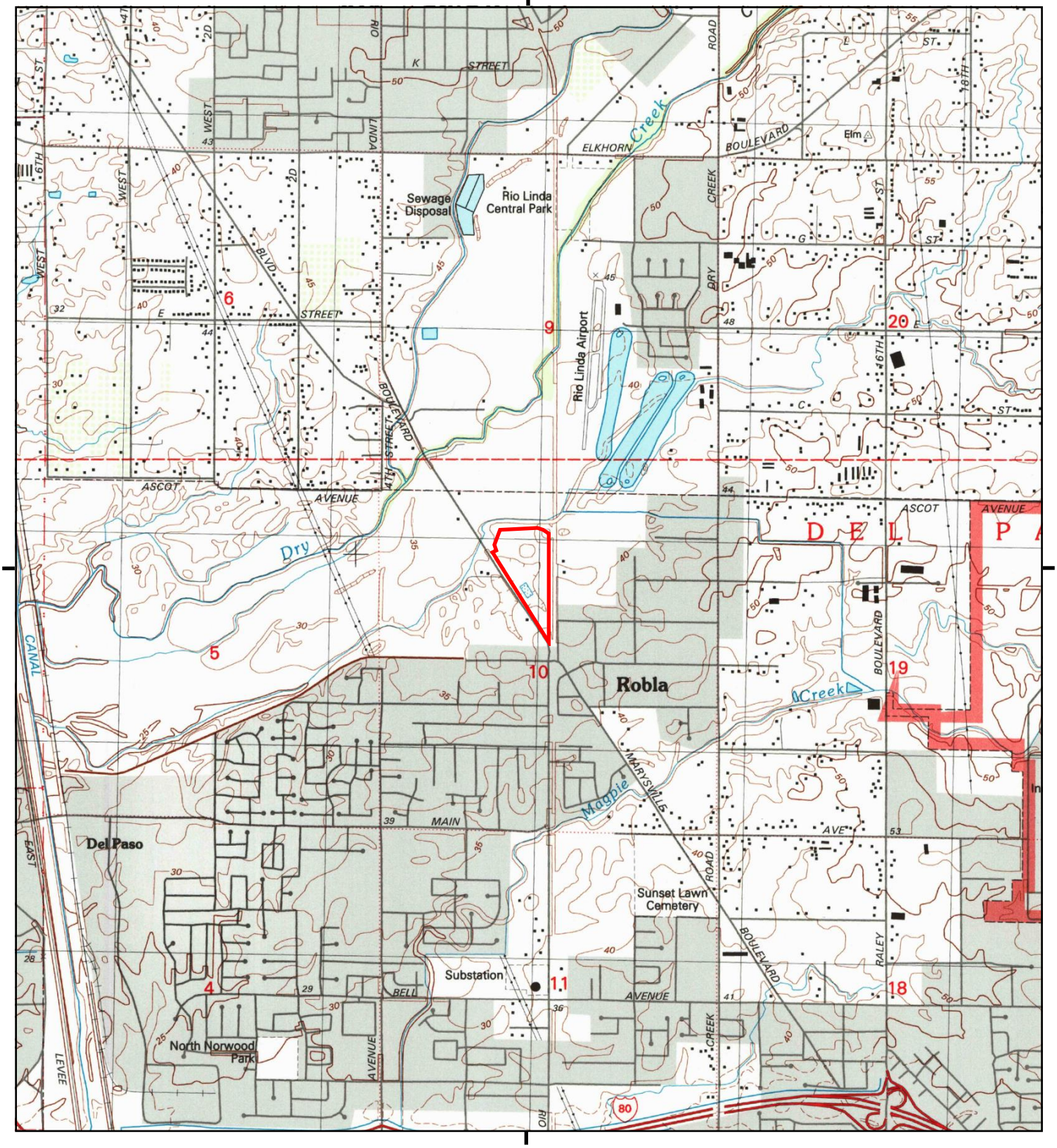
TP, Rio Linda, 2012, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1992



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

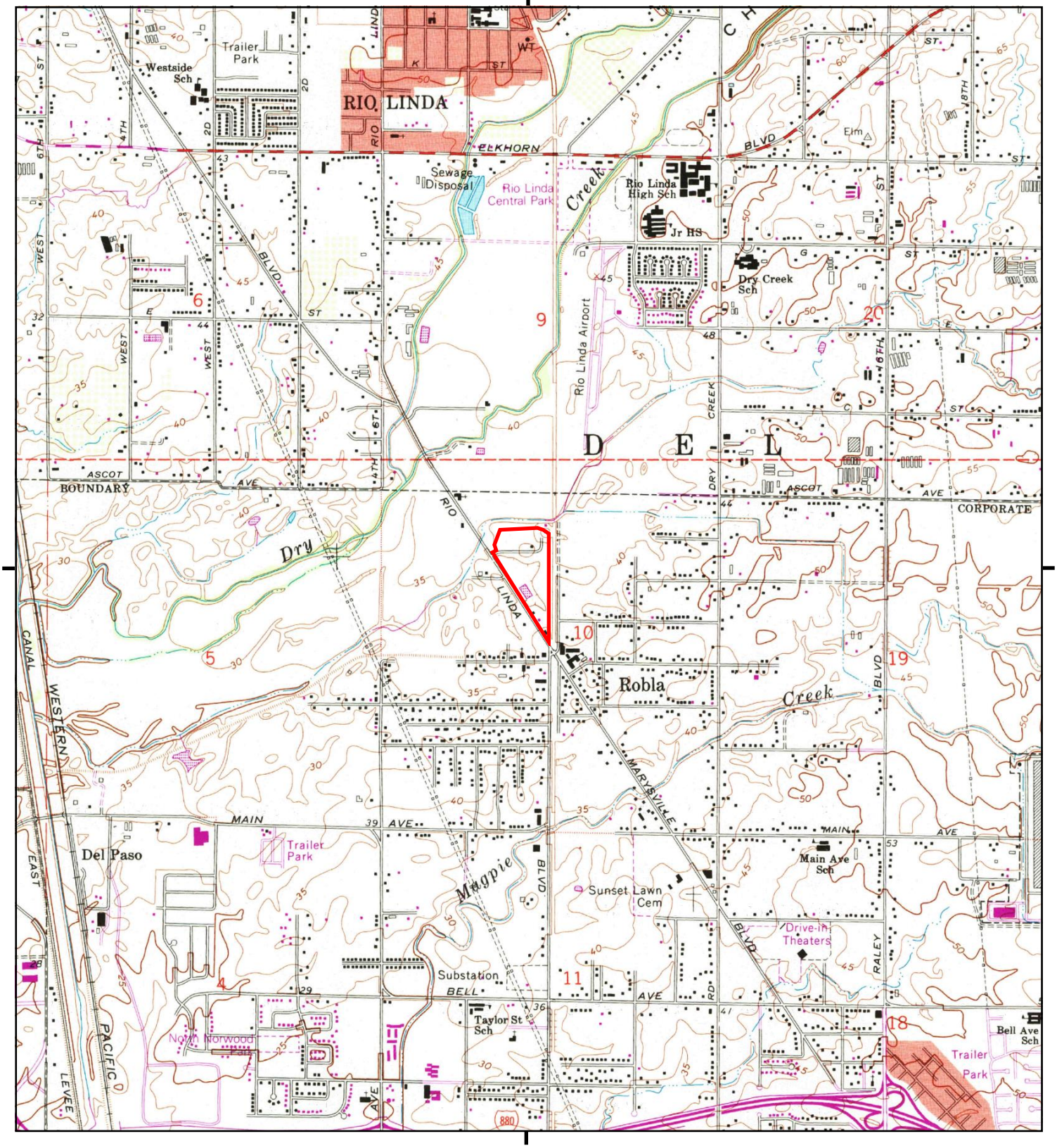
TP, Rio Linda, 1992, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1980



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

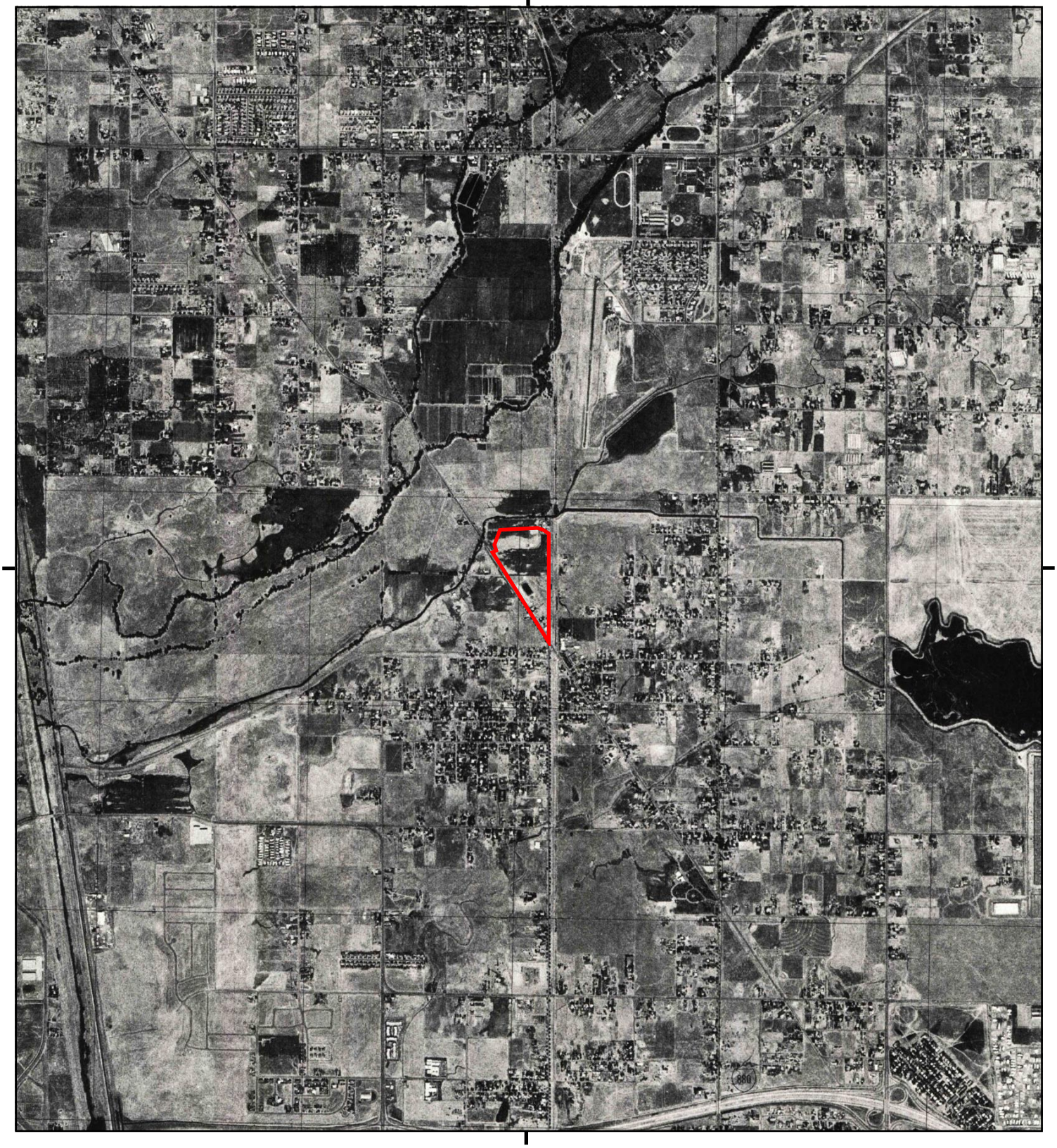
TP, Rio Linda, 1980, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1975



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

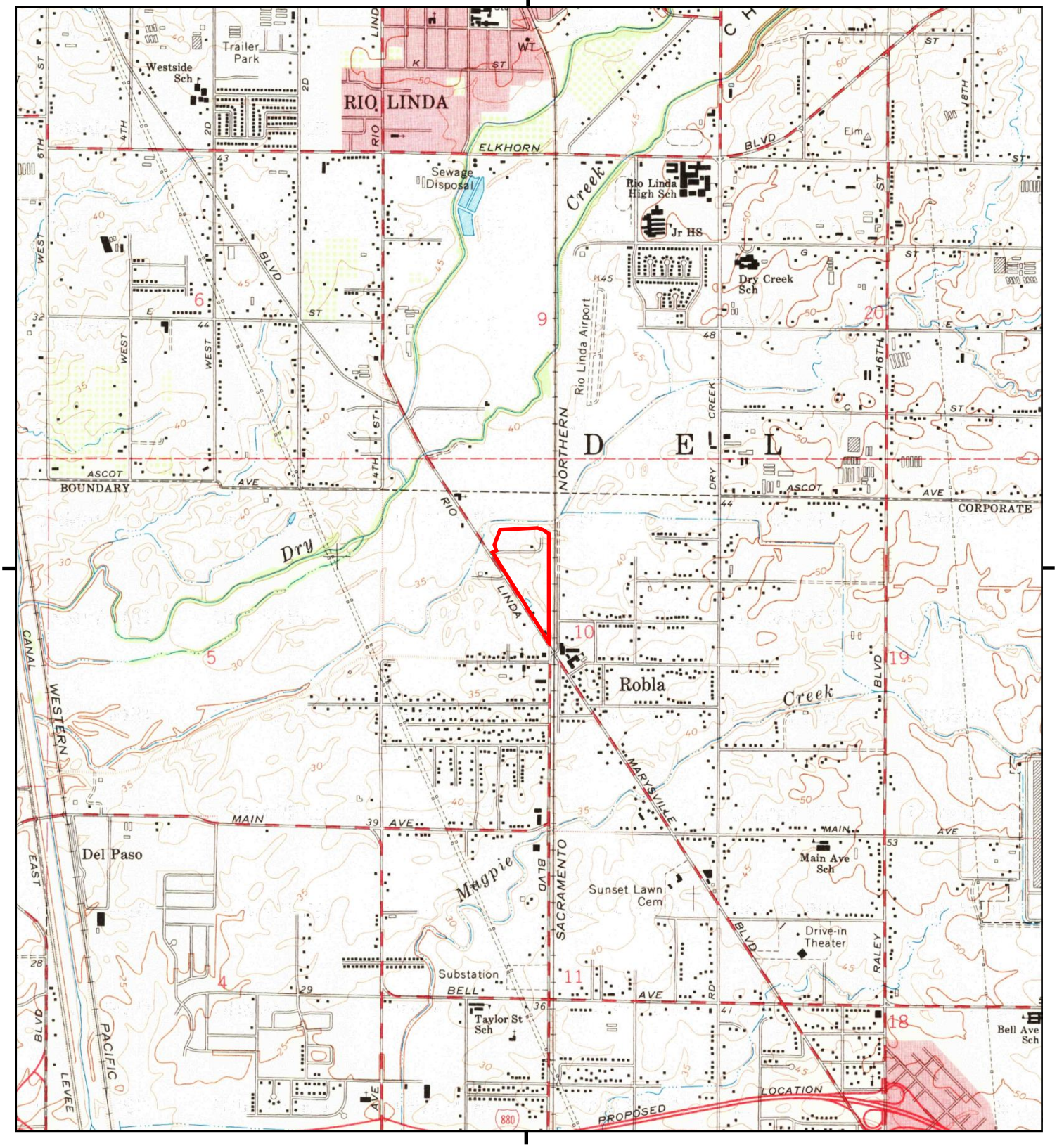
TP, Rio Linda, 1975, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1967



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

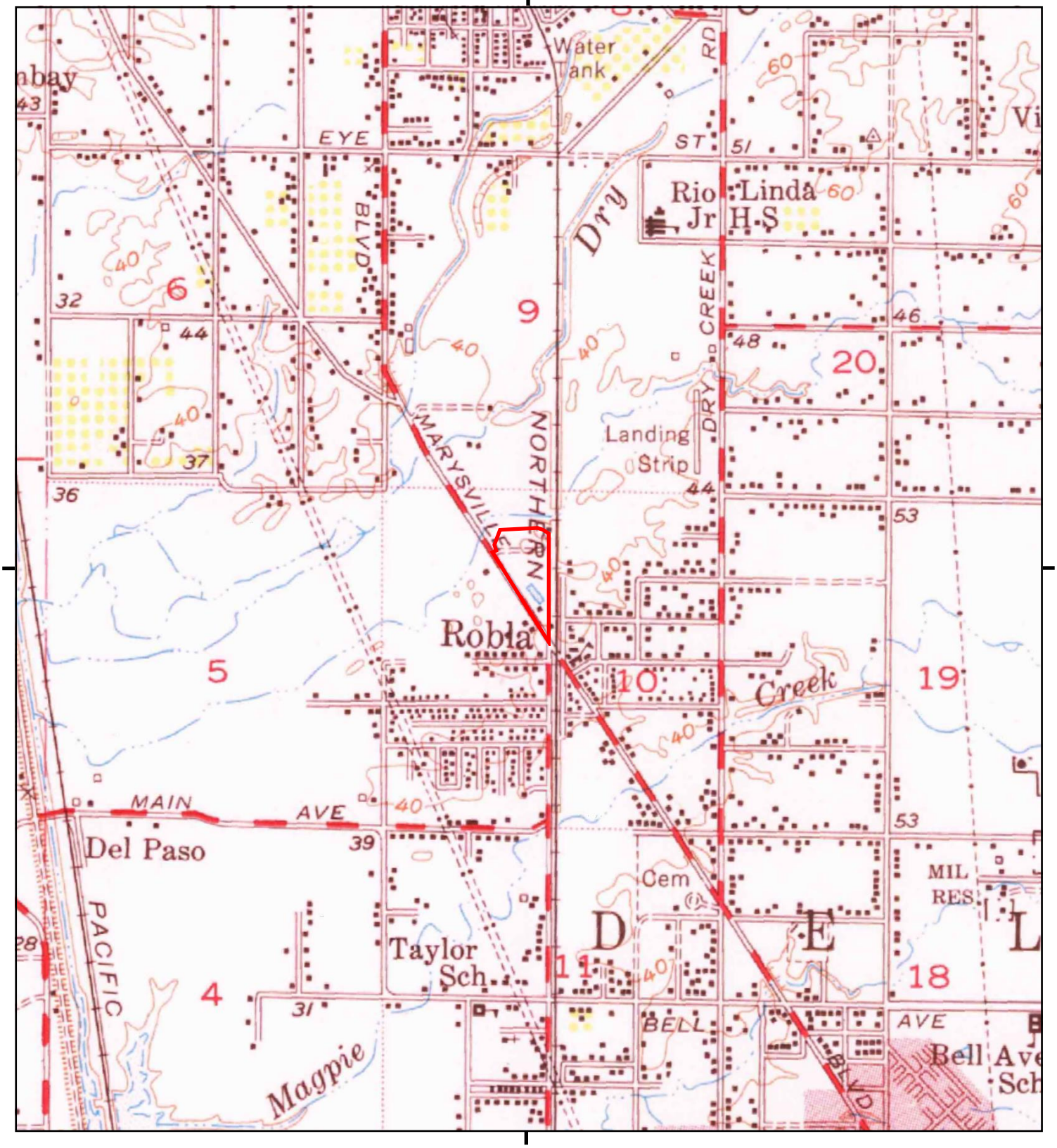
TP, Rio Linda, 1967, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1954



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

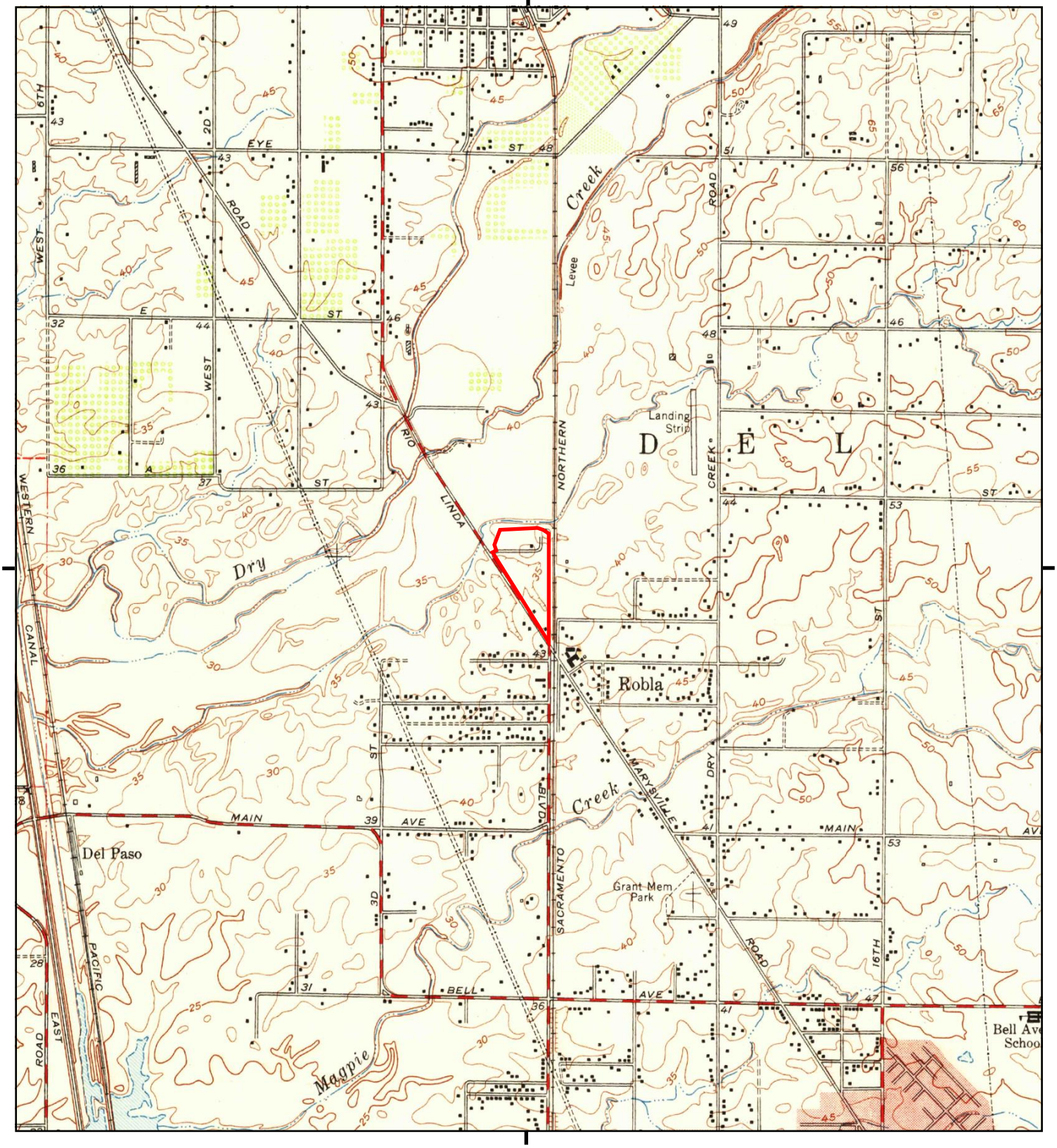
TP, Fair Oaks, 1954, 15-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1951



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

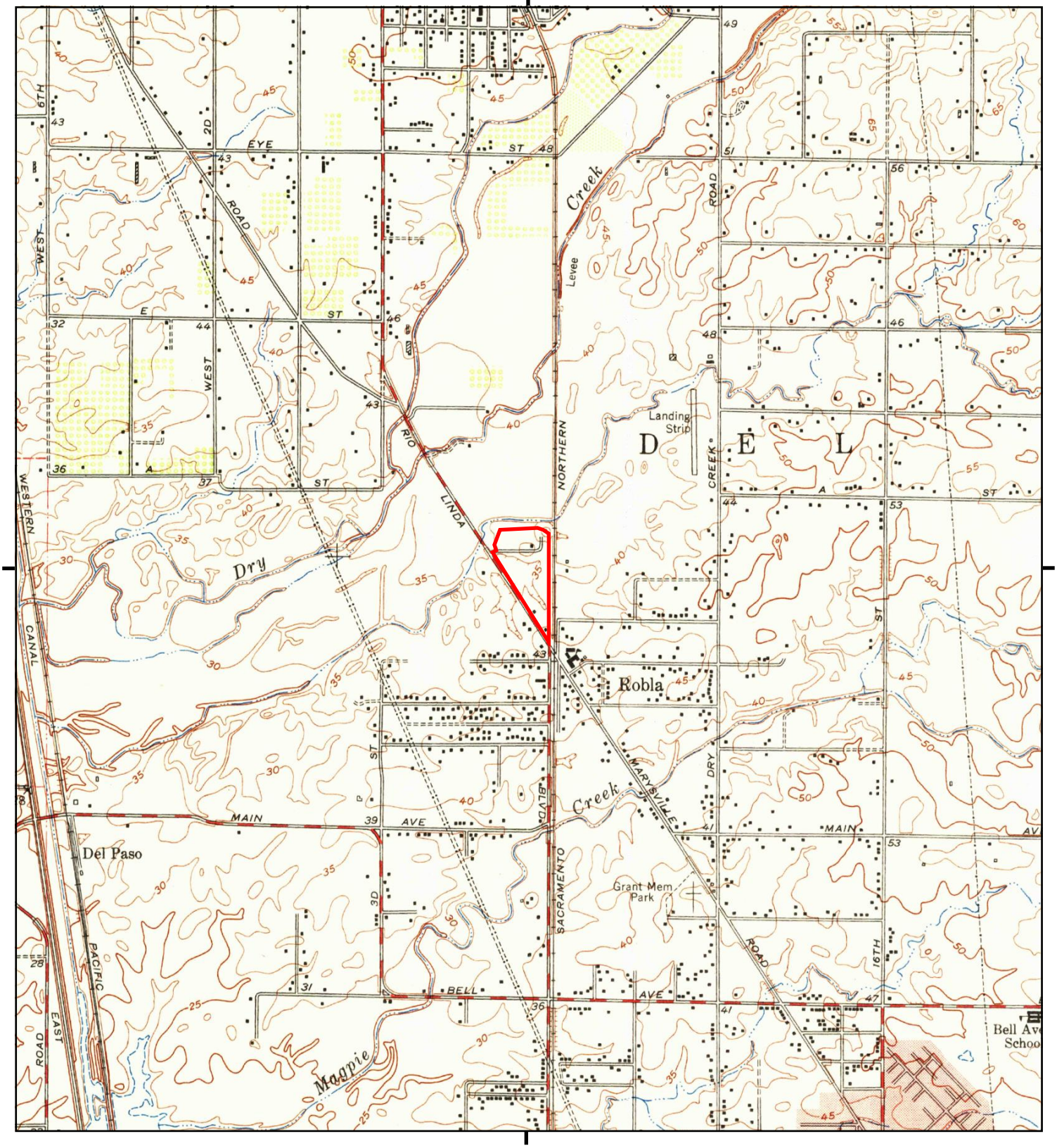
TP, Rio Linda, 1951, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1950



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

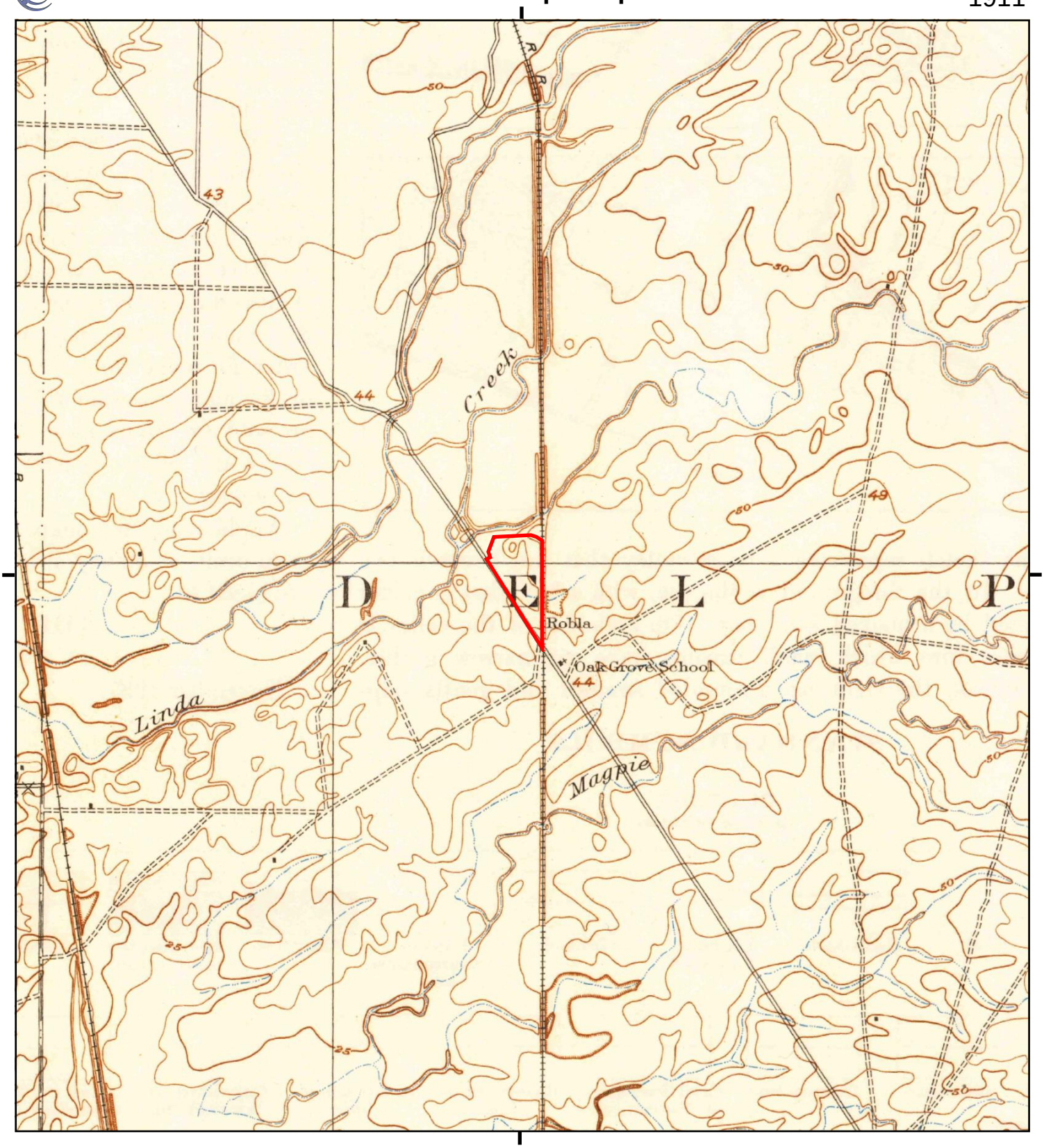
TP, Rio Linda, 1950, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1911



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

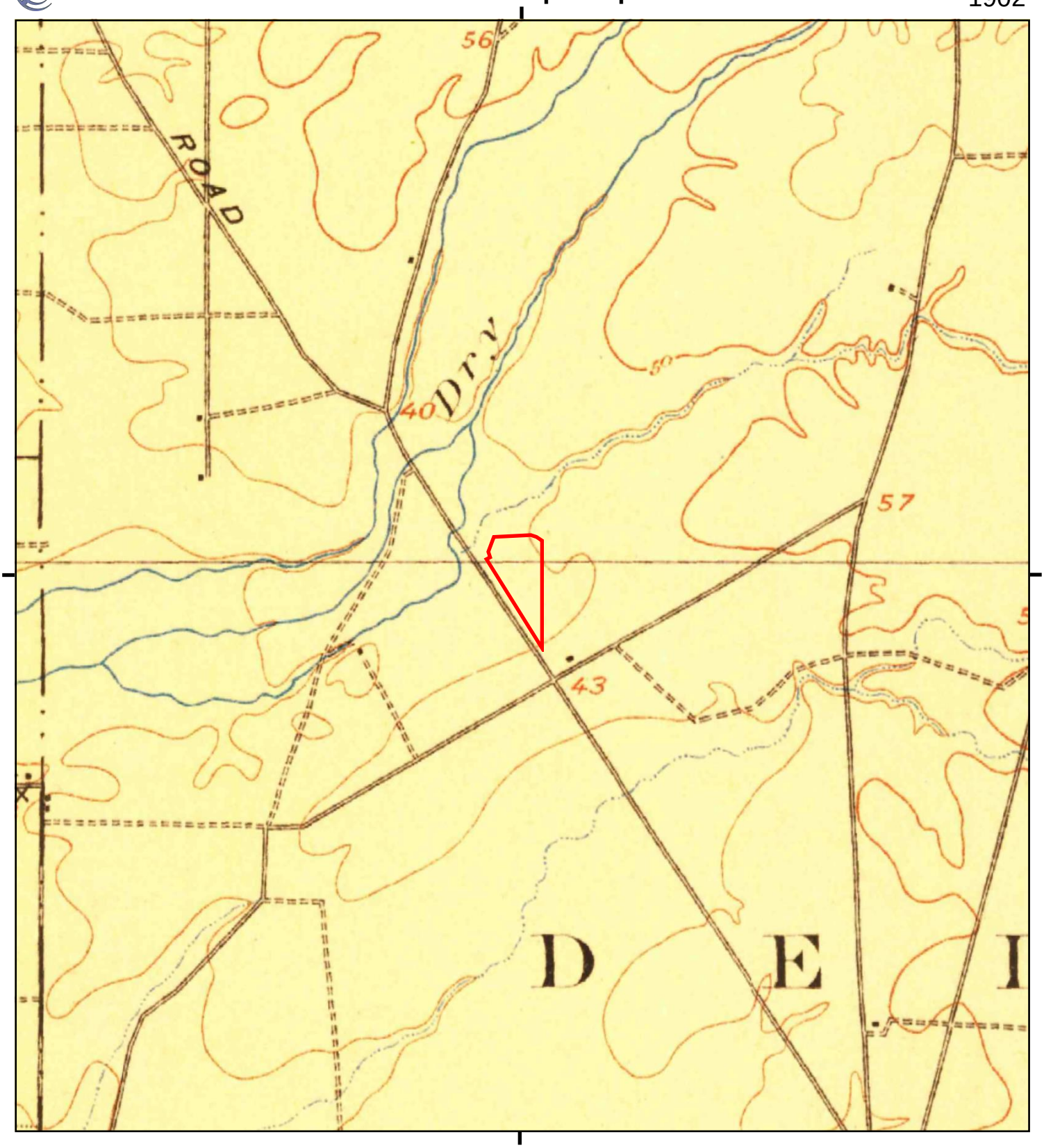
TP, Arcade, 1911, 7.5-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1902



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

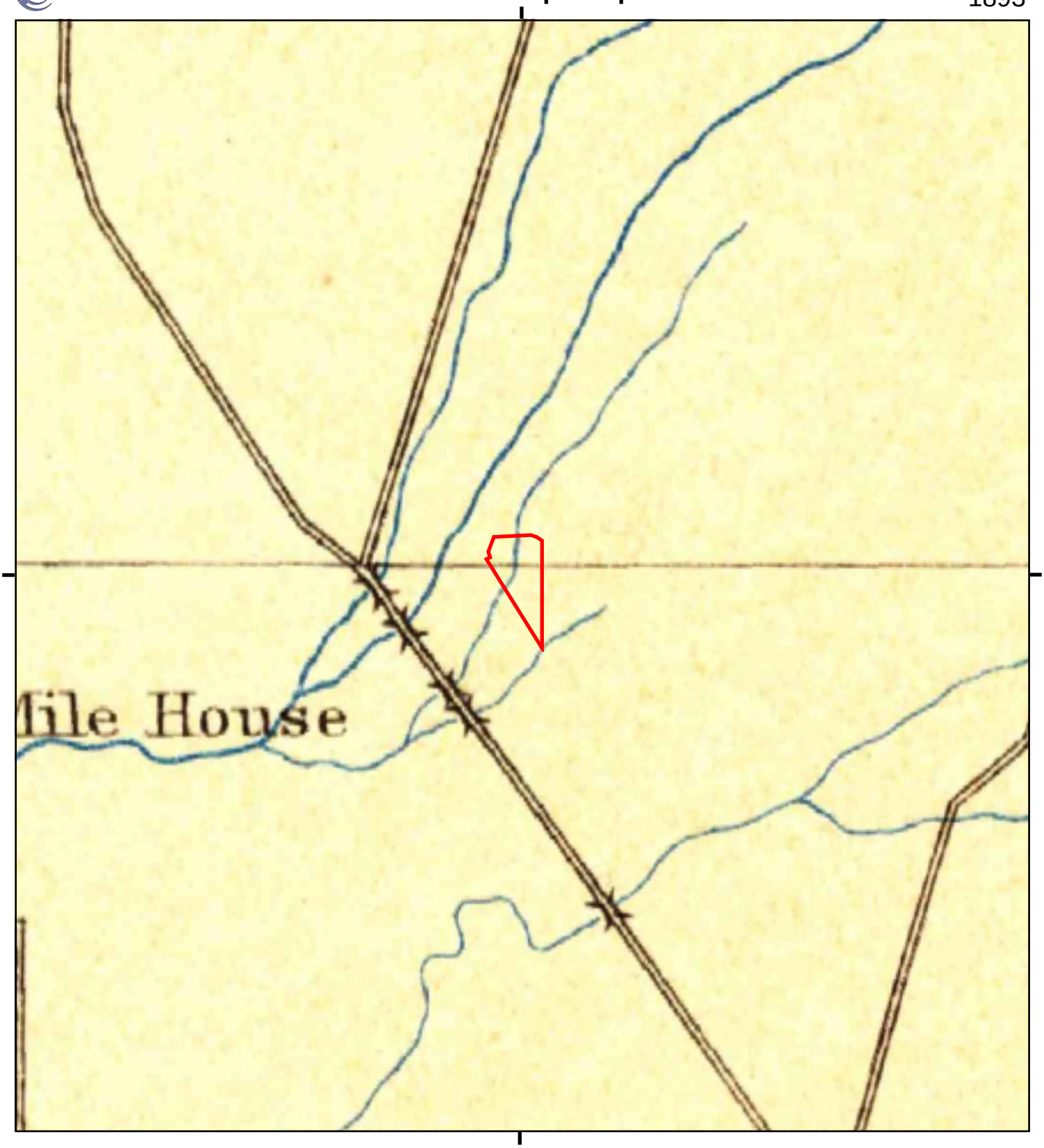
TP, Fairoaks, 1902, 15-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1893



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

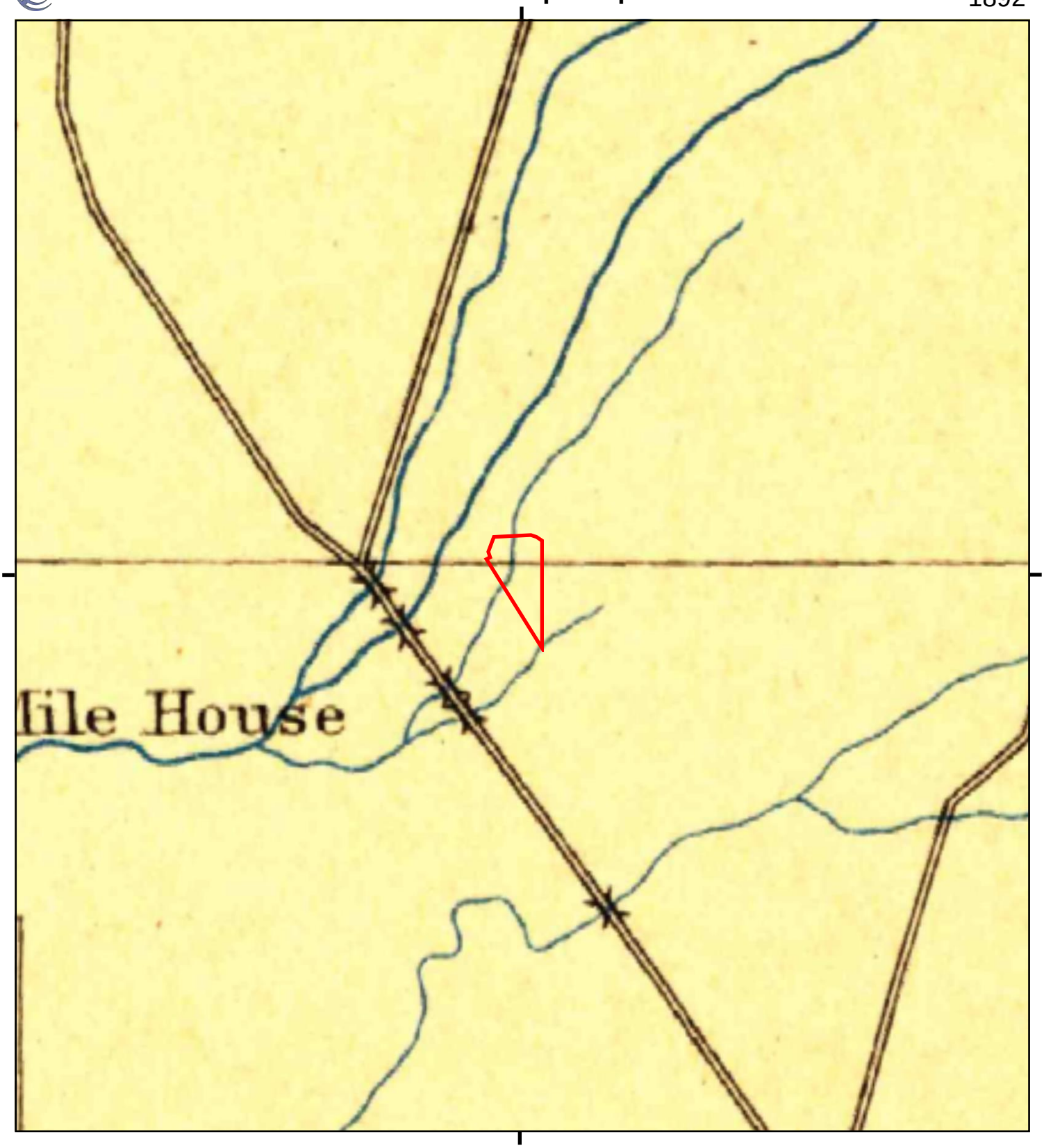
TP, Sacramento, 1893, 30-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1892



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

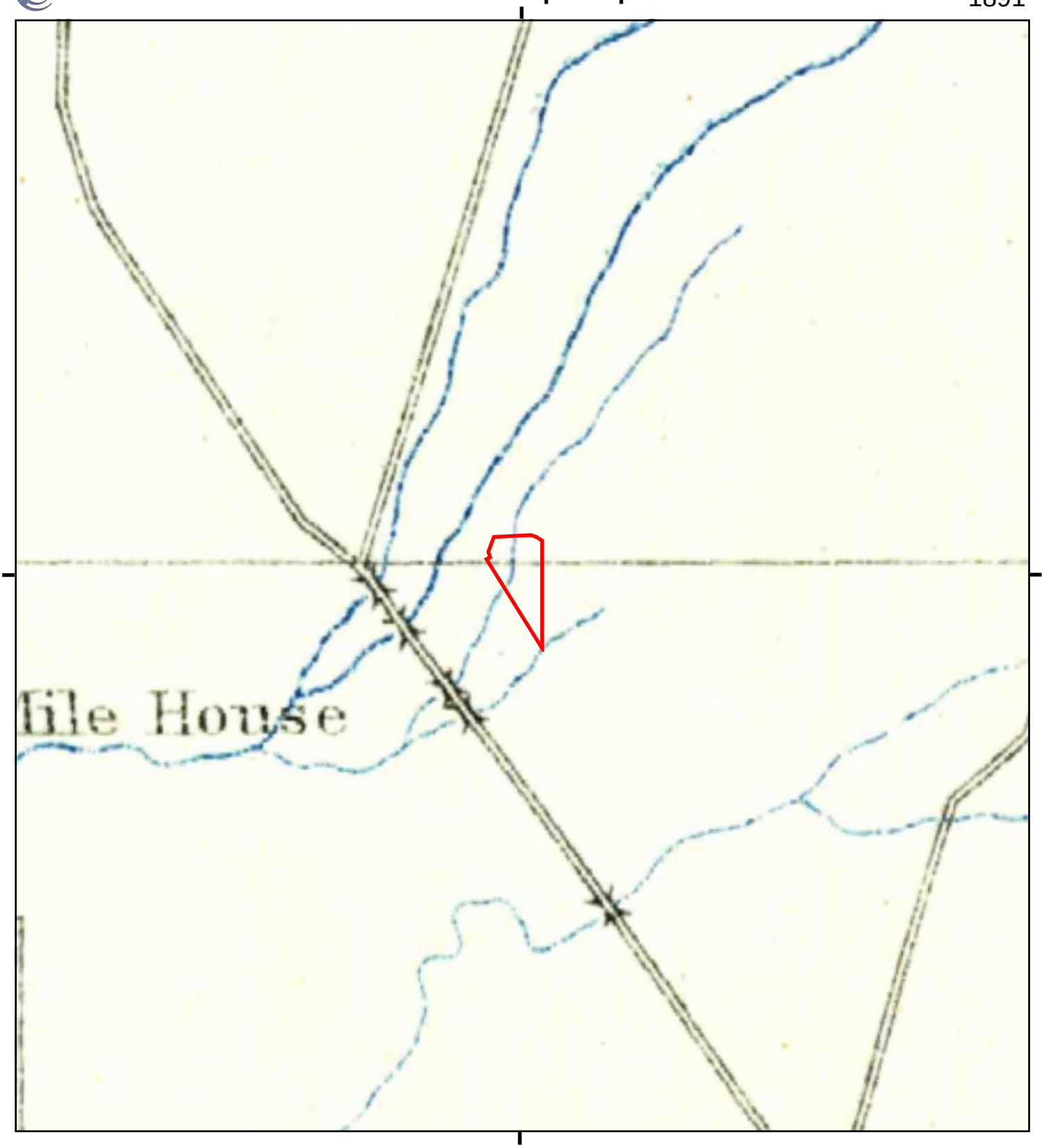
TP, Sacramento, 1892, 30-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

Historical Topo Map

1891



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Sacramento, 1891, 30-minute

SITE NAME: Rio Linda
ADDRESS: 5330 Rio Linda
Sacramento, CA 95838
CLIENT: Kim Lush

N

APPENDIX B-6
EDR DIRECTORY SEARCH

Rio Linda
5330 Rio Linda
Sacramento, CA 95838

Inquiry Number: 5925634.14
January 07, 2020

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2017 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc. or its affiliates is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1920 through 2005. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

Data by
infoUSA®
Copyright©2008
All Rights Reserved

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2005	Haines Company, Inc.	-	X	X	-
2002	SBC PACIFIC BELL	-	-	-	-
1999	Haines & Company	X	X	X	-
1995	Pacific Bell	-	-	-	-
1991	Pacific Bell	-	-	-	-
1982	R. L. Polk & Co.	-	-	-	-
1980	R. L. Polk & Co.	X	X	X	-
1975	R. L. Polk Co.	-	-	-	-
1970	Sacramento Directory Co.	-	-	-	-
1966	Sacramento Directory Co.	-	-	-	-
1965	Sacramento Directory Co. Publishers	-	-	-	-
1961	Sacramento Directory Co.	-	-	-	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1957	Sacramento Directory Co.	-	-	-	-
1956	Sacramento Directory Co.	-	-	-	-
1952	Sacramento Directory Co.	-	-	-	-
1947	Sacramento Directory Co.	-	-	-	-
1942	Sacramento Directory Co.	-	-	-	-
1937	Sacramento Directory Co.	-	-	-	-
1933	Sacramento Directory Co.	-	-	-	-
1928	Sacramento Directory Co.	-	-	-	-
1923	Sacramento Directory Co.	-	-	-	-
1920	Sacramento Directory Co.	-	-	-	-

EXECUTIVE SUMMARY

SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

Address	***Type***	***Findings***
5370 Rio Linda	Client Entered	
5240 Ri Linda	Client Entered	

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

5330 Rio Linda
Sacramento, CA 95838

FINDINGS DETAIL

Target Property research detail.

Ri Linda

5240 Ri Linda

Year	*Uses*	*Source*

Rio Linda

5370 Rio Linda

Year	*Uses*	*Source*

RIO LINDA BLVD

5240 RIO LINDA BLVD

Year	*Uses*	*Source*
1999	XXXX	Haines & Company
1980	Vacant	R. L. Polk & Co.

5330 RIO LINDA BLVD

Year	*Uses*	*Source*
1999	XXXX	Haines & Company
1980	Carlson Earl	R. L. Polk & Co.

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

RIO LINDA BLVD

5247 RIO LINDA BLVD

Year	*Uses*	*Source*
2005	KEITHLEYAnnle	Haines Company, Inc.
	KEITHLEY Annie	Haines Company, Inc.
1999	XXXX	Haines & Company
1980	Bernier A	R. L. Polk & Co.

ROSE ST

5404 ROSE ST

Year	*Uses*	*Source*
1999	LEE A	Haines & Company
1980	La Chappelle Lester	R. L. Polk & Co.

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
5247 RIO LINDA BLVD	2002, 1995, 1991, 1982, 1975, 1970, 1966, 1965, 1961, 1957, 1956, 1952, 1947, 1942, 1937, 1933, 1928, 1923, 1920
5404 ROSE ST	2005, 2002, 1995, 1991, 1982, 1975, 1970, 1966, 1965, 1961, 1957, 1956, 1952, 1947, 1942, 1937, 1933, 1928, 1923, 1920

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
5330 Rio Linda	2005, 2002, 1995, 1991, 1982, 1975, 1970, 1966, 1965, 1961, 1957, 1956, 1952, 1947, 1942, 1937, 1933, 1928, 1923, 1920

APPENDIX C
GEOTECHNICAL REPORT

GEOTECHNICAL EXPLORATION

SHEHADEH PROPERTY

SACRAMENTO, CALIFORNIA

SUBMITTED

TO

RYLAND HOMES

SACRAMENTO, CALIFORNIA

PREPARED

BY

ENGEO INCORPORATED

PROJECT NO. 7103.4.001.01

DECEMBER 17, 2005
REVISED MARCH 30, 2006

COPYRIGHT © 2006 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED

ENGEO
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
7103.4.001.01

December 17, 2005
Revised March 30, 2006

Mr. Chad Kiltz
Ryland Homes
2400 Del Paso Road, Suite 250
Sacramento, CA 95834

Subject: Shehadeh Property
APN 226-0062-004, 226-0062-008, 226-0062-009,
226-0062-011, and 226-0102-001
Rio Linda Boulevard
Sacramento, California

GEOTECHNICAL EXPLORATION

Dear Mr. Kiltz:

With your authorization, we conducted a geotechnical exploration for the subject property located in Sacramento, California. In our opinion, the subject property is suitable for future residential construction from a geotechnical standpoint, provided that the recommendations contained herein are implemented. The accompanying report contains the findings of our study and geotechnical recommendations for the proposed development.

We are pleased to have been of service to you on this project, and we will be glad to consult further with you and your design team.

Very truly yours,

ENGEO INCORPORATED

FOR: Steve Harris, PE
sdh/jb:gex

Reviewed by:

Daniel S. Haymsch, GE

REGISTERED PROFESSIONAL ENGINEER
RONALD E. BRUGGERS
GE 2094
Exp. 12/31/07
GEOTECHNICAL
STATE OF CALIFORNIA

2213 Plaza Drive • Rocklin, CA 95765 • (916) 786-8883 • Fax (888) 279-2698
www.engeo.com

TABLE OF CONTENTS

Letter of Transmittal

Page

INTRODUCTION 1
Purpose and Scope 1
Site Location and Description 1
Proposed Development 2

GEOLOGY AND SEISMICITY 3
Geology 3
Regional Faulting and Seismicity 3
Field Exploration 4
Laboratory Testing 5
Subsurface Stratigraphy 6
Groundwater Conditions 6

GEOLOGIC AND GEOTECHNICAL HAZARDS 7
Seismic Hazards 7
Ground Rupture 7
Ground Shaking 7
Liquefaction 8
Lurching 9

CONCLUSIONS AND RECOMMENDATIONS 10
General 10
Demolition and Stripping 10
Subgrade Preparation 12
Selection of Materials 12
Fill Placement 12
Foundation Design 13
Subgrade Treatment for Post-Tensioned Mat Foundations 14
Foundation Concrete 14
Slab Moisture Vapor Reduction 15
Secondary Slab-on-Grade Construction 15
Retaining Walls 16
Sound Walls 17
Preliminary Pavement Design 18
Site Surface Drainage 20
Requirements for Landscaping Irrigation 20
Utilities 21

LIMITATIONS AND UNIFORMITY OF CONDITIONS 23

7103.4.001.01
December 17, 2005
Revised March 30, 2006

TABLE OF CONTENTS (Continued)

REFERENCES
FIGURES
APPENDIX A – Boring Logs
APPENDIX B – Laboratory Test Results
APPENDIX C – Guide Contract Specifications

INTRODUCTION

Purpose and Scope

The purpose of this report is to provide you and your design team with the results of our geotechnical study, including recommendations for the design and construction of the proposed residential development located in Sacramento, California.

The scope of our work has included a review of available literature and geologic maps pertaining to the site, exploratory drilling and sampling, laboratory testing on selected samples obtained in our borings, engineering analysis, and preparation of this report summarizing our conclusions and recommendations for design of the proposed development.

A parcel map showing the location of the proposed development was provided to us by Ryland Homes to aid us in our exploration.

This report was prepared for the exclusive use of Ryland Homes and their design team consultants for design of the proposed development. In the event that any changes are made in the character, design or layout of the development, the conclusions and recommendations contained in this report should be reviewed by ENGEO Incorporated to determine if modifications to the report are necessary. This report may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without the express written consent of ENGEO Incorporated.

Site Location and Description

The subject property is located north of the intersection of Rio Linda Boulevard and Marysville Boulevard in Sacramento, California as shown on the Vicinity Map, Figure 1. The

site is approximately 25.2 acres, and identified as Assessor's Parcel Numbers (APN) 226-0062-004, 226-0062-008, 226-0062-009, 226-0062-011, and 226-0102-001 . The site is relatively level and is bordered on the southwest by Rio Linda Boulevard, on the east by a bike path and to the north by undeveloped property.

The property is currently a vacant field. No structures were observed on the site at the time of our reconnaissance. Numerous piles of concrete rubble and debris were located on the northeastern portion of the site and some non-engineered fill was located on the southern portion of the site as shown on the Site Plan, Figure 2.

Proposed Development

Based on discussions with Ryland Homes, the proposed development will consist of constructing single-family residences with interior streets and utilities. We anticipate relatively light loadings for one- or two-story, wood-framed single-family structures. It is our understanding that the site grading for this project will likely include only minor cutting and filling to establish pads and streets.

GEOLOGY AND SEISMICITY

Geology

The geology of the site is mapped as Quaternary Holocene age Riverbank Formation (Qr) (Wagner et al. 1991). The Riverbank Formation is mapped as stream terrace deposits of clay, silt, sand, and gravel lenses. These semi-consolidated lenses are not necessarily continuous and may vary considerably across the site due to ancient stream depositional characteristics.

Regional Faulting and Seismicity

As with the rest of the Central Valley in Northern California, the site is situated between two seismically active regions (CDMG Open-File Report 96-08). According to parameters of the 1997 Uniform Building Code, this site is in Earthquake Zone 3. Our review of geologic literature did not identify the presence of known active or potentially active faults on the project site. The Geologic Map of the Sacramento Quadrangle (Jennings 1992) shows no faults mapped within the property. The California Geological Survey does not list Sacramento as an area included in the Alquist-Priolo earthquake hazard zones.

To evaluate potential levels of ground shaking, we used Blake's computer program, EQFAULT (2004) to locate potential seismic sources within 100 kilometers (62 miles) of the site. Two of the closest known faults classified as active by the State of California Geologic Survey (CGS) are the Foothills Fault System located approximately 19 miles to the east and the Great Valley fault located approximately 30 miles to the west. The Great Valley fault is omitted from the ICBO 1998 document, "Maps of Known Active Fault Near-Source Zones in California and Adjacent Properties of Nevada" based on a lack of surface expression.

Table I lists distances to the closest known active and potentially active faults and summarizes their estimated earthquake magnitudes and ground shaking potentials.

TABLE I

Fault Name	Approximate Distance Mi. (km)	Maximum Moment Mag.[1]	Peak Site Acc. (G) [2]	Est. Site Intensity Mod. Merc.
Foothills Fault System	19 (30)	6.5	0.15	VIII
Great Valley	30 (49)	6.9	0.11	VII
Hunting Creek - Berryessa	43 (69)	7.1	0.07	VII
Concord / Green Valley	44 (71)	6.7	0.06	VI
West Napa	53 (85)	6.5	0.04	V
Mount Diablo	58 (93)	6.7	0.05	VI
Greenville	58 (93)	6.7	0.04	V
Bartlett Springs Fault System	60 (96)	7.6	0.07	VII

1 - SOURCE: CDMG, OPEN-FILE REPORT 96-08.
2 - ATTENUATION RELATION: IDRISS (1994) HORIZ – DEEP SOIL

Field Exploration

Four exploratory borings were drilled on December 6, 2005. The approximate exploration locations are shown on the Site Plan, Figure 2, and the logs of the exploratory borings are included as Figures A-1 through A-4 in Appendix A. The exploration locations were approximately located by estimating from existing features.

Exploratory Borings B-1 through B-4 were drilled with a truck-mounted Mobil Drill B-24 drill rig equipped with 4-inch-diameter solid flight augers. An ENGEO engineer logged the borings in the field and collected soil samples using either a 3.0-inch O.D. California-type split-spoon sampler fitted with 6-inch-long brass liners, or a 2-inch O.D. Standard Penetration Test (SPT) split-spoon sampler. The samplers were advanced with a 140-pound hammer with a

30-inch drop, employing a manual trip hydraulic hammer system. The penetration of the samplers into the native materials was field recorded as the number of blows needed to drive the sampler 18 inches in 6-inch increments. Blow count results on the boring logs were recorded as the number of blows required for the last one foot of penetration and have not been converted using any correction factors.

The logs depict subsurface conditions within the borings at the time the exploration was conducted. Subsurface conditions at other locations may differ from conditions noted at these boring locations. The passage of time may result in altered subsurface conditions. In addition, stratification lines represent the approximate boundaries between soil types and the transitions may be gradual.

Laboratory Testing

Selected samples recovered during drilling were tested to determine the following soil characteristics:

Characteristic	Test Method	Location of Results Within this Report
Natural Unit Weight and Moisture Content	ASTM D-2216	Appendix A
Plasticity Index	ASTM D-4318	Appendix B
Gradation	ASTM D-422	Appendix B

Unit weight and moisture content test results are shown on the boring logs (Appendix A, Figures A1 through A4) while the remaining test results are presented in Appendix B.

Subsurface Stratigraphy

The soils encountered in our exploration were variable across the site but generally consisted of varying mixtures of clay and silt with occasional thin lenses of silty sand to sandy silt to the maximum depth explored of 20 feet. This description is consistent with the alluvial nature of the soil deposits at the site. All materials encountered were at least dense/stiff in consistency. The surficial soil generally has a moderate to high expansion potential. The exploratory boring logs presented in Appendix A provide detailed descriptions of the soil conditions at each location explored.

Groundwater Conditions

Groundwater was not encountered within our borings. Based on review of the historical data for a local well, as published on the State of California Department of Water Resources Web Site, the groundwater in the area is approximately 40 feet below the existing ground surface. Fluctuations in groundwater levels are expected to occur seasonally in response to changes in precipitation, irrigation, and other factors not evident at the time of our exploration.

GEOLOGIC AND GEOTECHNICAL HAZARDS

The site was evaluated with respect to known geological and geotechnical hazards common to the Sacramento Area. The primary hazards identified are described below. None of the hazards listed are considered unique to the property and affect most sites in the region.

Seismic Hazards

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking, ground lurching, soil liquefaction, and lateral spreading. These hazards are discussed in the following sections. Based on topographic and lithologic data, the risk of regional subsidence or uplift, or flooding from tsunamis or seiches is considered low to negligible at the site.

Ground Rupture. Since there are no known active faults crossing the property, and the site is not located within an Earthquake Fault Special Study Zone, it is our opinion that primary fault ground rupture is unlikely at the subject property.

Ground Shaking. The most significant seismic hazard to the proposed site is the secondary hazard of ground shaking. Earthquakes of moderate to high magnitude are expected to occur within Northern California and may occur during the design life of the project. These events may cause moderate ground shaking at the subject site during the design life of the proposed structures.

To mitigate the ground shaking effects, all structures should be designed using sound engineering judgment and the latest Uniform Building Code (UBC) requirements as a minimum.

The site is classified as a stiff soil profile. The following UBC parameters are provided for project design purposes.

1997 UNIFORM BUILDING CODE – Chapter 16

ITEM	DESIGN VALUE	UBC SOURCE
Seismic Zone	3	Figure 16-2
Seismic Zone Factor	0.30	Table 16-I
Soil Profile Type	S_D	Table 16-J
Seismic Source Type	B	Table 16-U
Seismic Coefficient, C_a	0.36	Table 16-Q
Seismic Coefficient, C_v	0.54	Table 16-R

Seismic design provisions of current building codes generally prescribe minimum lateral forces, applied statically to the structure, combined with the gravity forces of dead and live loads. The code-prescribed lateral forces are generally substantially smaller than the expected peak forces that would be associated with a major earthquake. Therefore, structures should be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute a guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, it is reasonable to expect that a well-designed and well-constructed structure will not collapse or cause loss of life in a major earthquake (SEAOC, 1996).

Liquefaction. Liquefaction is a phenomenon in which saturated, cohesionless soils are subject to a temporary, but essentially total, loss of shear strength because of pore pressure buildup under the reversing cyclic shear stresses associated with earthquakes. The potential for liquefaction is

considered to be low because of the depth to groundwater, dense nature of the site soils, and the relatively low levels of expected ground shaking.

Dynamic Densification Due to Earthquake Shaking. Densification of loose granular soils above the groundwater level can cause settlement due to earthquake-induced vibrations. The potential for dynamic densification at the site is expected to be low.

Lateral Spreading. Lateral spreading is a failure within a nearly horizontal soil zone that causes the overlying soil mass to move down a gentle slope or toward a free face such as a creek or open body of water. Lateral spreading is most often associated with strength loss due to liquefaction. As described above, the liquefaction potential of the subsurface soils is considered to be low. For this reason, the potential for lateral spreading at the site during seismic shaking is also considered to be low.

Lurching. Ground lurching occurs as a result of the rolling motion imparted to the ground surface during energy released by an earthquake. The deformation of the ground surface by such rolling motion can cause ground cracks to form. The potential for the formation of these cracks is considered greater at contacts between material with significantly different properties, such as deep soft soil and bedrock. Such an occurrence is possible at the subject site as in other locations in the Sacramento Area, but the offset or strain is expected to be minor.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the exploration and laboratory test results, it is our opinion that the site is feasible for construction of the proposed single-family residential subdivision from a geotechnical standpoint. The recommendations included in this report, along with other sound engineering practices, should be incorporated in the design and construction of the project. ENGEO should be retained to review the development plan prior to construction to confirm that the conclusions contained herein are appropriate and valid for the design-specific details.

Based on a review of the surrounding developments, we anticipate that minor grading will be required to provide drainable grades for the site and building pads. Grading operations should meet the requirements of the Guide Contract Specifications included in Appendix C and must be observed and tested by ENGEO's field representative. ENGEO should be notified a minimum of 72 hours prior to grading in order to coordinate its schedule with the grading contractor.

Ponding of stormwater, other than within engineered detention basins, should not be permitted at the site, particularly during work stoppage for rainy weather. Before the grading is halted by rain, positive slopes should be provided to carry the surface runoff to storm drainage structures in a controlled manner to prevent erosion damage.

Demolition and Stripping

Grading should begin with the removal of non-engineered fill, buried pipes, irrigation lines, debris piles, old foundations, designated fences, trees and associated root systems, and any other

deleterious materials. Underground structures that will be abandoned or are expected to extend below proposed finished grades should be removed from the project site.

All vegetation in areas to be graded should also be removed as necessary for project requirements. The depth of removal of these materials should be determined by ENGEO at the time of grading.

Tree roots should be removed to a depth of 2 to 3 feet below existing grades. The organically contaminated materials should not be used in proposed building pads or pavement areas. The organics should be stockpiled and may be used in landscape areas or may be off hauled. Any debris found within any areas to be graded should be removed.

The actual depth of removal should be determined in the field by a representative of ENGEO based on actual conditions encountered during the site grading. Excavations resulting from demolition and stripping below design grades should be cleaned to a firm undisturbed, non-yielding soil surface as determined by ENGEO.

As an alternative to stripping of organic material, agricultural fields and/or fallow open fields may be cut/harvested as low to the ground as possible and as close to the time of grading as practical. The organic material should be hauled off site or to landscaping areas subject to approval by the landscape architect. The remaining stubs of the crops/grass and roots then may be thoroughly disced into the underlying soil providing the organic content of the resulting soil does not exceed 3 percent organic content.

All backfilling of depressions resulting from demolition, stripping, or removal of tree root bulb excavations, should be observed by ENGEO. ENGEO should be notified prior to the backfill of

any depression to observe the backfill operations. Tree removal should be monitored by ENGEO on a part-time basis, with full-time observation of the backfill operations.

Subgrade Preparation

After the site has been properly cleared, stripped and necessary excavations have been made, a minimum of the upper 12 inches should be scarified, moisture conditioned, and compacted in accordance with the recommendations presented below in the "Fill Placement" section.

Except for landscaping areas, the site should be underlain by a minimum depth of 12 inches of moisture conditioned and compacted engineered fill. The compaction recommendations for the preparation of existing soil prior to fill placement are the same as those for engineered fill, as described in a subsequent section of this report.

Selection of Materials

With the exception of any organically contaminated materials (soil that contains more than 3 percent organic material by weight), the site soils are suitable for use as engineered fill. ENGEO should be informed when import materials are planned for the site. Import materials should be submitted and approved by ENGEO prior to delivery at the site; should be free of organic material, debris, and fragments larger than 6 inches in greatest dimension; and should have a Plasticity Index consistent with the on-site material.

Fill Placement

Once the subgrade is prepared in accordance with the above recommendations, the surface of all areas to receive fill should be scarified to a minimum depth of 12 inches, moisture conditioned, and recompacted as engineered fill to provide adequate bonding with the initial lift of fill. All fills

should be placed in uncompacted lifts not exceeding 8 inches. In cut portions of the site, a 12-inch scarification, moisture conditioning and recompaction of the exposed subgrade will be necessary, below the finished subgrade elevation.

The following compaction control recommendations should be applied to all fills:

Test Procedures:	ASTM D-1557 (latest edition).
Required Moisture Content:	A minimum of 4 percentage points above optimum moisture content.
Relative Compaction:	At between 88 and 92 percent relative compaction.

It is important that all site preparation, including demolition and stripping, be done under the observation of ENGEO and should be carried out according to the requirements contained herein.

Foundation Design

It is our understanding that Ryland Homes prefers to use post-tensioned (PT) concrete mat slabs at the subject site. It is our opinion that PT mat foundations would be appropriate for the proposed residential structures. Post-tensioned mats should be designed according to methods recommended in the Post Tensioning Institute "Design and Construction of Post-Tensioned Slabs-on-ground" Second Edition dated 1996.

PT mats should be a minimum of 10 inches thick with a 2-inch thickened edge and be designed for an average allowable bearing pressure of 1,000 pounds per square foot (psf) for dead plus live loads, with maximum localized bearing pressures of 1,500 psf at column or wall loads. Allowable bearing pressures can be increased by one-third for all loads including wind or seismic.

Post-tensioned mats should be designed according to the method recommended in "Design and Construction of Post-Tensioned Slabs-On-Ground" (Post-Tensioning Institute, 1996). Based upon the existing soil conditions, we recommend using the following soil criteria for design of the post-tensioned mat foundations:

Center Lift Condition:	Edge Moisture Variation Distance, e_m= 5.0 feet Differential Soil Movement, y_m = 2.6 inches
Edge Lift Condition:	Edge Moisture Variation Distance, e_m = 4.0 feet Differential Soil Movement, y_m= 1.1 inch

Recommended minimum mat thickness = 10 inches, with 2-inch thickened edge if sand bedding is used.

The actual thickness of the slab should be determined by the project Structural Engineer using the above-mentioned criteria. The minimum soil backfill height against the slab at the perimeter should be 6 inches.

Subgrade Treatment for Post-Tensioned Mat Foundations. The subgrade material under post-tensioned mats should be uniform. The pad subgrade should be moisture conditioned to a moisture content of at least 5 percentage points above optimum to a depth of 12 inches. The subgrade should be thoroughly soaked prior to placing the concrete. The subgrade should not be allowed to dry prior to concrete placement.

Foundation Concrete. No sulfate testing was performed as part of this study. We recommend that sulfate testing be performed on the graded lots prior to placing foundation concrete. As an alternative to performing sulfate testing, we recommend that the Structural Engineer consider using Type V plus pozzolan cement in the foundation and slab concrete for the subject site. A maximum water cement ratio of 0.45 and a minimum compressive strength of 4,500 psi should

be used for the foundation concrete if sulfate testing is not performed. Structural engineering requirements for strength design may result in more stringent concrete specifications.

Slab Moisture Vapor Reduction. When buildings are constructed with concrete mat foundations, water vapor from beneath the concrete mat will migrate through the slab and into the building. This water vapor can be reduced but not stopped. Vapor transmission can negatively affect floor coverings and lead to increased moisture within a building. When water vapor migrating through the slab would be undesirable, we recommend that the concrete be underlain by a moisture retarder that meets ASTM E 1745 – 97 Class A requirements for water vapor permeance, tensile strength, and puncture resistance. All joints and penetrations of the vapor retarder medium should be sealed.

The Structural Engineer or a Concrete Technology expert should be consulted on the advisability of using a 2-inch-thick sand cushion (Section 2.03, Part I of Guide Contract Specifications) under slabs for concrete curing purposes.

Secondary Slab-on-Grade Construction

Secondary slabs include exterior walkways, driveways and steps. Secondary slabs-on-grade should be designed specifically for their intended use and loading requirements. Cracking of the exterior flatwork is normal as it is part of the concrete curing process and should be expected. Frequent control joints should be provided during slab construction for control of cracking.

Secondary slabs-on-grade should have a minimum thickness of 4 inches and should be underlain by a 4-inch-thick layer of clean, crushed rock or gravel. As a minimum requirement, slabs-on-grade should be reinforced with steel bars; in our experience, welded wire mesh may

not be sufficient to control slab cracking. The Structural Engineer should design the actual slab reinforcement.

Exterior slabs should be constructed with thickened edges extending at least 6 inches into compacted soil to minimize water infiltration and should slope away from the building to prevent water from flowing toward the foundations. Consideration should be given to lightly moistening the site soils just prior to concrete placement.

Retaining Walls

Unrestrained drained retaining walls constructed on level ground may be designed for active lateral fluid pressures determined as follows:

Backfill Slope Condition (horizontal:vertical)	Active Pressure (pound per cubic foot (pcf))
Level	50
4:1	55
3:1	60
2:1	70

Passive pressures acting on foundations and keyways may be assumed as 250 pounds per cubic foot (pcf) provided that the area in front of the retaining wall is level for a distance of at least 10 feet or three times the depth of foundation and keyway, whichever is greater. The upper one foot of soil should be excluded from passive pressure computations unless it is confined by pavement or a concrete slab.

The friction factor for sliding resistance may be assumed as 0.35. We recommend that retaining wall footings be designed using an allowable bearing pressure of 2,500 pounds per square foot in firm native materials or fill. Appropriate safety factors against overturning and sliding should be incorporated into the design calculations.

The Geotechnical Engineer should be consulted on design values where surcharge loads, such as from automobiles, are expected or where a downhill slope exists below a proposed wall.

All retaining walls should be provided with drainage facilities to prevent the build-up of hydrostatic pressures behind the walls. Wall drainage may be provided using a 4-inch-diameter perforated pipe embedded in Class 2 permeable material (Part I of Guide Contract Specifications, Section 2.05B), or free-draining gravel surrounded by synthetic filter fabric. The width of the drain blanket should be at least 12 inches. The drain blanket should extend to about one foot below the finished grades. As an alternative, prefabricated synthetic wall drain panels can be used. The upper one foot of wall backfill should consist of on-site clayey soils. Collector perforated pipes should be directed to an outlet approved by the Civil Engineer. Subdrain pipe, drain blanket and synthetic filter fabric should meet the minimum requirement as listed in Part I of the Guide Contract Specifications.

All backfill should be placed in accordance with recommendations provided above for engineered fill. Light equipment should be used during backfill compaction to minimize possible overstressing of the walls.

Sound Walls

Sound walls may be supported by a pier-and-grade-beam foundation provided the following recommendations are incorporated into the design. Pier design and construction criteria are as follows:

Pier diameter:	Minimum 12 inches.
Pier depth:	Minimum 8 feet deep.

Maximum allowable skin friction:	500 pounds per square foot (psf). This value may be increased by one-third when considering seismic or wind loads. Exclude the upper 36 inches from pier load capacity computations.
Minimum pier spacing:	3 pier diameters, center-to-center. Where closer spacings are unavoidable, the piers should be designed with a reduced skin friction of 330 psf.

An equivalent fluid weight of 250 pounds per cubic foot acting on 1½ times the pier diameter may be used to evaluate passive resistance. The passive pressure may be increased by one-third for transient loads such as wind or seismic. The passive earth pressure starts at a depth of 12 inches or where there is 10 feet horizontal distance to daylight in sloping areas.

The Structural Engineer should design the pier reinforcement, but, as a minimum, at least two No. 4 rebars should extend the full length of each pier. Where applicable, the pier reinforcement should be tied to the grade beam as recommended by the Structural Engineer.

If the base of the sound wall retains soil, we recommend the design consider the lateral loads imposed by the soils using the design criteria presented in the Retaining Walls section above.

Preliminary Pavement Design

No R-Value testing was performed as part of this exploration; however, based on our experience in the area, we estimate that an R-value of 5 is appropriate for preliminary design. Using estimated traffic indices for various pavement loading requirements, we developed the following recommended pavement sections using Procedure 608 of the Caltrans Highway Design Manual (including the asphalt factor of safety), presented in the table below.

PRELIMINARY PAVEMENT SECTIONS

Traffic Index	AC (inches)	AB (inches)
4.5	2.5	9.0
5	3.0	10.0
5.5	3.5	11.0
6	3.5	13.0
6.5	4.0	14.0
7	4.0	16.0
8	4.5	19.0
9	5.5	21.0

Notes: AC is asphaltic concrete
AB is aggregate base Class 2 Material with minimum R = 78

The Traffic Index should be determined by the Civil Engineer or appropriate public agency. Once grading of the proposed street subgrade is completed, additional R-Value testing should be performed to verify or change the above preliminary pavement sections. Pavement construction and materials should comply with the requirements of the Standard Specifications of the State of California Division of Highways, City of Sacramento requirements and the following minimum requirements.

- All pavement subgrades should be scarified to a depth of 12 inches below finished subgrade elevation, moisture conditioned to at least 2 percentage points above optimum moisture, and compacted to a minimum of 95 percent relative compaction.

- Subgrade soils should be in a stable, non-yielding condition at the time aggregate base materials are placed and compacted.

- Adequate drainage must be designed by the project Civil Engineer such that the subgrade soils and aggregate base materials are not allowed to become saturated.

- Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate base and should be compacted to at least 95 percent of maximum dry density at a minimum moisture content of optimum.

- Asphalt paving materials should meet current Caltrans specifications for asphalt concrete.

- All concrete curbs separating pavement and irrigated landscaped areas should extend into the subgrade and below the bottom of adjacent aggregate base materials.

Site Surface Drainage

The project site should be positively graded at all times to provide for rapid removal of surface water runoff away from foundation systems and to prevent ponding of water under floors or seepage toward foundations, pavements, or flatwork at any time during or after construction. Ponding of water may result in undesirable weakening of the subgrade materials, loss of compaction, slab and excessive slab or foundation movements.

No ponding of stormwater should be permitted on the building pads. All lots should be graded to drain individually. As a minimum requirement, finished grades should provide a slope of at least 3 percent within 5 feet from the exterior walls at right angles to them to allow surface water to drain positively away from the structures. Care should be exercised to provide that landscape mounds will not interfere with the above requirements.

Stormwater from roof downspouts should be carried away in closed conduits to the curb or an approved outlet structure.

Requirements for Landscaping Irrigation

Planted areas should be avoided immediately adjacent to the residences. If planting adjacent to the residences is desired, the use of plants that require very little moisture is recommended. Sprinkler systems should not be installed where they may cause ponding or saturation of foundation soils within 3 feet from building walls or under the structures.

Irrigation of landscape areas should be limited strictly to that necessary for plant growth. Excessive irrigation could result in progressive saturation, weakening and possible swelling of the foundation soils. The Landscape Architect should be aware of these requirements. Water that is allowed to saturate foundation soils may have adverse effects on the structures.

The project Landscape Architect and prospective owners and their landscape maintenance personnel should be informed of the grading and surface drainage requirements included in this report.

Utilities

It is recommended that all utility trench backfill be done under the observation of ENGEO. Utility trenches in areas to be paved should also be constructed in accordance with Sacramento County requirements.

Where trenches are located outside of city pavement and sidewalk areas, the pipe zone backfill (i.e. material beneath and immediately surrounding the pipe) may consist of a well-graded import or native material less than ¾ inch in maximum dimension. Trench backfill compaction and moisture conditioning should be in accordance with general fill compaction recommendations.

In general, uniformly graded gravel should not be used for pipe or trench zone backfill because of the potential for migration of: (1) soil into the relatively large void spaces found in this type of material and (2) water along trenches backfilled with this type of material.

It is the responsibility of the contractor to provide safe and stable trench side walls during utility trench construction. The trench side wall should either be sloped back to a safe or stable angle or be supported by shoring in accordance with the CAL-OSHA and/or the Sacramento County requirements.

Utility trenches should not be located adjacent to any foundation areas unless the placement, depth and backfill materials to be used are reviewed by ENGEO. Utility trenches constructed parallel to foundations should be located entirely above a plane extending down from the lower edge of the footing at an angle of 45 degrees. Utility companies and Landscape Architects should be made aware of this recommendation. Compaction of trench backfill by jetting should not be allowed at this site.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report is issued with the understanding that it is the responsibility of the owner to transmit the information and recommendations of this report to developers, contractors, buyers, architects, engineers, and designers for the project so that the necessary steps can be taken by the contractors and subcontractors to carry out such recommendations in the field. The conclusions and recommendations contained in this report are solely professional opinions.

We strived to perform our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty is expressed or implied.

We developed this report with limited subsurface exploration data. We assumed that our subsurface exploration data is representative of soil and groundwater conditions across the site. Considering possible underground variability of soil and groundwater, additional costs may be required to complete the project. We recommend that the owner establish a contingency fund to cover such costs. If unexpected conditions are encountered, notify ENGEO immediately to review these conditions and provide additional and/or modified recommendations, as necessary.

This report is based upon field and other conditions discovered at the time of preparation of ENGEO's work. This document must not be subject to unauthorized reuse, that is, use without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time. Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to ENGEO's work. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include on-site construction

observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims, including, but not limited to claims arising from or resulting from the performance of such services by other persons or entities, and any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

SELECTED REFERENCES

Blake, T. F.; 2004, EQFAULT, A Computer Program of the Deterministic Prediction of Peak Horizontal Acceleration from Digitized California Faults. Fault data updated to California Division of Mines and Geology California Fault Parameters (CDMG OFR 96-08).

Boore, D. M., Joyner, W. B., and Fumal, T. E., 1993, Estimation of Response Spectra and Peak Accelerations from Western North American Earthquakes: An Interim Report. United States Geological Survey, Open-File Report 93-509.

California Division of Mines and Geology (CDMG) and the International Conference of Building Officials (ICBO), 1998, Determining Distances from Faults Within and Bordering the State of California for the 1997 Uniform Building Code.

Idriss, I. M., 1994, Attenuation Coefficients for Deep and Soft Soil Conditions, in Blake, T.F., 1996, EQSEARCH computer program, referenced as personal communication to Blake, page 106.

International Conference of Building Officials, 1997, Uniform Building Code.

International Conference of Building Officials (ICBO), 1998, Maps of Known Active Fault Near-Source Zones in California and Adjacent Properties of Nevada.

Peterson, et al., 1996, Probabilistic Seismic Hazard Assessment for the State of California: California Division of Mines and Geology Open File Report 96-08.

SEAOC, 1996, Recommended Lateral Force Requirements and Tentative Commentary.

United States Department of Agriculture Soil Conservation Service, 1992, Soil Survey of San Joaquin County, California.

Wagner, D.L., et al., Geologic Map of the Sacramento Quadrangle, 1981, California Division of Mines and Geology.

LIST OF FIGURES

Figure 1	Vicinity Map
Figure 2	Site Plan

COPYRIGHT © 2005 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.

N

0 FEET 2000

0 METERS 1000

BASE MAP SOURCE: MS STREETS AND TRIPS

ENGEO INCORPORATED
EXCELLENT SERVICE SINCE 1971

VICINITY MAP
SHEHADEH PROPERTY
SACRAMENTO, CALIFORNIA

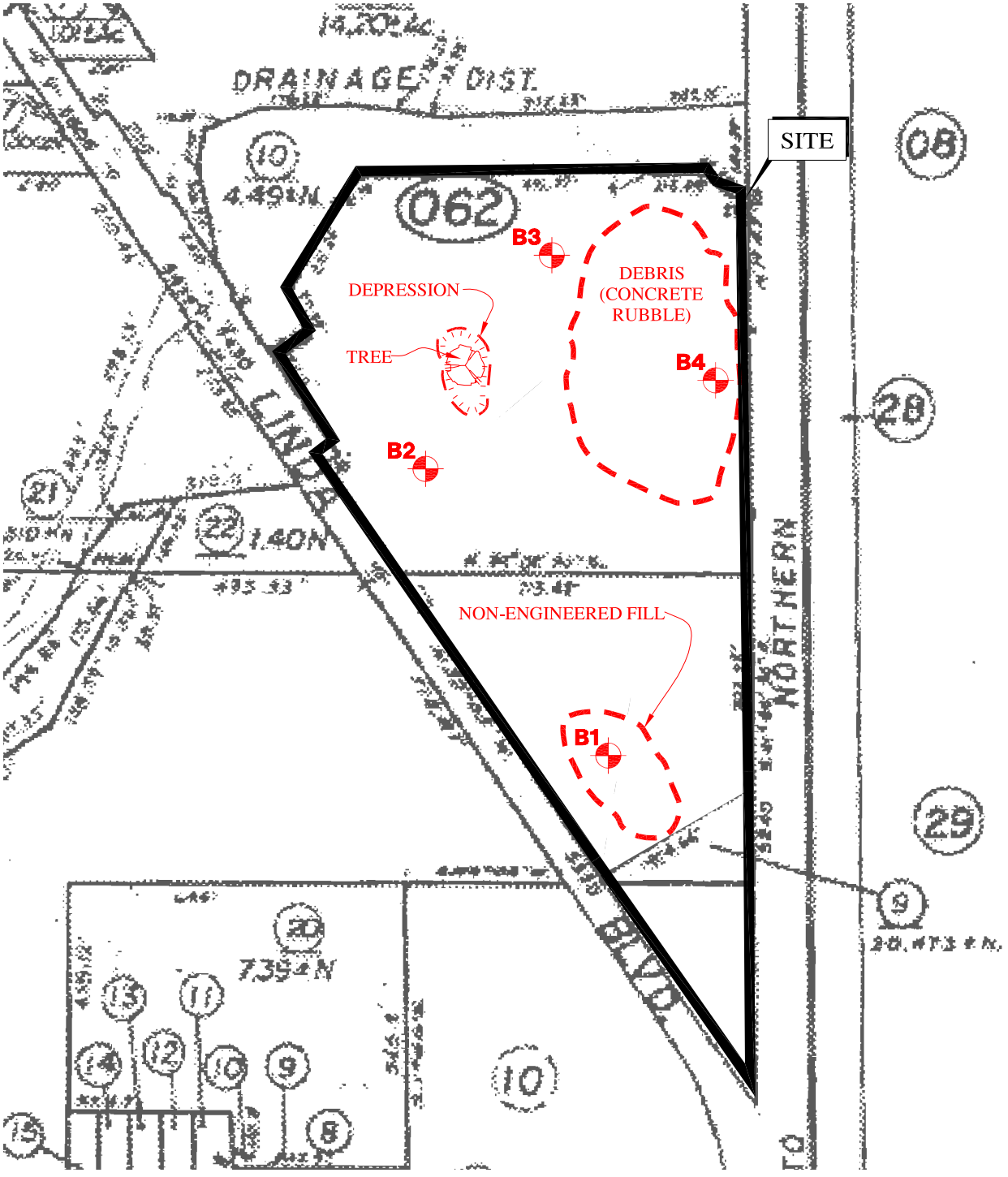
PROJECT NO.:	7103.4.001.01
DATE:	MARCH 2006
DRAWN BY: PC	CHECKED BY: SH

FIGURE NO. 1

ORIGINAL FIGURE PRINTED IN COLOR

G:\Drafting\DRAFTING2_Dwg\7103\001\GEX\7103400101-GEX1-VicMap-0306.dwg 3-31-06 08:14:06

COPYRIGHT © 2006 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.



EXPLANATION

B4 APPROXIMATE LOCATION OF BORING

0 FEET 300
0 METERS 150

BASE MAP SOURCE: ASSESSOR'S OFFICE SACRAMENTO COUNTY

ENGEO INCORPORATED
EXCELLENT SERVICE SINCE 1971

SITE PLAN
SHEHADEH PROPERTY
SACRAMENTO, CALIFORNIA

PROJECT NO.:	7103.4.001.01
DATE:	MARCH 2006
DRAWN BY: PC	CHECKED BY: SH

FIGURE NO. 2

ORIGINAL FIGURE PRINTED IN COLOR

G:\Drafting\DRAFTING2_Dwg\7103\001\GEX\7103400101-GEX2-SiteMap-0306.dwg 3-31-06 08:11:5

APPENDIX A

ENGEO INCORPORATED

Boring Logs A-1 through A-4

7103.4.001.01
December 17, 2005
Revised March 30, 2006

KEY TO BORING LOGS

	MAJOR TYPES		DESCRIPTION
COARSE-GRAINED SOILS MORE THAN HALF OF MAT'L LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW - Well graded gravels or gravel-sand mixtures GP - Poorly graded gravels or gravel-sand mixtures
		GRAVELS WITH OVER 12 % FINES	GM - Silty gravels, gravel-sand and silt mixtures GC - Clayey gravels, gravel-sand and clay mixtures
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW - Well graded sands, or gravelly sand mixtures SP - Poorly graded sands or gravelly sand mixtures
		SANDS WITH OVER 12 % FINES	SM - Silty sand, sand-silt mixtures SC - Clayey sand, sand-clay mixtures
FINE-GRAINED SOILS MORE THAN HALF OF MAT'L SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50 % OR LESS		ML - Inorganic silt with low to medium plasticity CL - Inorganic clay with low to medium plasticity OL - Low plasticity organic silts and clays
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50 %		MH - Inorganic silt with high plasticity CH - Inorganic clay with high plasticity OH - Highly plastic organic silts and clays
	HIGHLY ORGANIC SOILS		PT - Peat and other highly organic soils

GRAIN SIZES

U.S. STANDARD SERIES SIEVE SIZE: 200, 40, 10, 4

CLEAR SQUARE SIEVE OPENINGS: 3/4 ", 3", 12"

SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT (S.P.T.)
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	STRENGTH*	BLOWS/FOOT (S.P.T.)
VERY SOFT	0-1/4	0-2
SOFT	1/4-1/2	2-4
MEDIUM STIFF	1/2-1	4-8
STIFF	1-2	8-15
VERY STIFF	2-4	15-30
HARD	OVER 4	OVER 30

MOISTURE CONDITION

DRY	Absence of moisture, dusty, dry to touch
MOIST	Damp but no visible water
WET	Visible freewater
SATURATED	Below the water table

MINOR CONSTITUENT QUANTITIES (BY WEIGHT)

TRACE	Particles are present, but estimated to the less than 5%
SOME	5 to 15%
WITH	15 to 30%
.....Y	30 to 50%

SAMPLER SYMBOLS

- Modified California (3" O.D.) sampler
- California (2.5" O.D.) sampler
- S.P.T. - Split spoon sampler
- Shelby Tube
- Continuous Core
- Bag Samples
- Grab Samples
- NR No Recovery

LINE TYPES

- ———— Solid - Layer Break
- – – – – – – Dashed - Gradational or approximate layer break

GROUND-WATER SYMBOLS

- Groundwater level during drilling
- Stabilized groundwater level

ENGEO INCORPORATED
EXCELLENT SERVICE SINCE 1971

(S.P.T.) Number of blows of 140 lb. hammer falling 30" to drive a 2-inch O.D. (1-3/8 inch I.D.) sampler

* Unconfined compressive strength in tons/sq. ft., asterisk on log means determined by pocket penetrometer

LOG OF BORING B1

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 41 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Safety Hammer

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		SANDY SILT (ML), light gray, hard, moist, slight plasticity, with some gravel.						
						31	13.6	114.3	+4.5*
	1		SILTY CLAY (CL), dark gray, hard, moist, slight to moderate plasticity, with some sand.			55/5"	12.5	107.1	4.5*
5									
	2					50/4"	16.4	97.8	
			Becomes light gray, slight plasticity.						
						50/4"	15.2		4.0*
10	3								
	4		CLAYEY SILT (ML), dark brown, hard, moist, non to slight plasticity, with trace sand.						
						54/6"			
15									
	5								
			SILTY CLAY (CL), grayish white, hard, moist, slight plasticity, slightly cemented, interlayer with clayey silt.						
	6					59/6"			+4.5*
20			Bottom of boring at 20 feet. No groundwater encountered.						
	7								
25									
	8								
	9								
30									

LOG OF BORING B2

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 40 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Sfety Hammer

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		SILTY CLAY (CL), dark gray, hard, moist, slight to moderate plasticity, with trace gravel.			50/4"	13.2		+4.5*
	1		CLAYEY SILT (ML), light gray, hard, moist, slight plasticity.			63	15.5		
5	2					50/5"	14.1		
			SILTY CLAY (CL), grayish white, hard, moist, slight to moderate plasticity, with trace sand.			75			+4.5*
10	3								
	4		CLAYEY SILT (ML), dark gray, stiff, moist, slight plasticity.			55/6"			2.0
15	5								
			With some sand.			52			
20	6		Bottom of boring at 20 feet. No groundwater encountered.						
25	7								
	8								
30	9								

LOG OF BORING B3

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 40 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Safety Hammer

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		CLAY (CH), black, stiff, moist, moderate plasticity, with trace sand.			25	19.4	104.4	2.0*
	1		CLAYEY SILT (ML), brown, hard, moist, slight plasticity, with trace sand.			50/5"	14.8	107.5	4.5*
5			With some sand.						
	2					50/4"	14.6	113.8	
			Becomes grayish white.			59			+4.5*
10	3								
	4		Becomes brown, with some fine-grained sand.			53/6"			
15	5								
			SILTY SAND (SM), brown, very dense, moist, medium-grained sand.			50/4"	21.7	87.7	
20	6		Bottom of boring at 20 feet. No groundwater encountered.						
25	7								
	8								
30	9								

LOG OF BORING B4

Shehadeh Property
Rio Linda, CA
7103.4.001.01

DATE DRILLED: December 6, 2005
HOLE DEPTH (FT): 20.0 ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (FT-MSL): 40 ft.

LOGGED / REVIEWED BY: G. Hu/S. Harris
DRILLING CONTRACTOR: RAM
DRILLING METHOD: Solid Flight
HAMMER TYPE: Safety Hammer

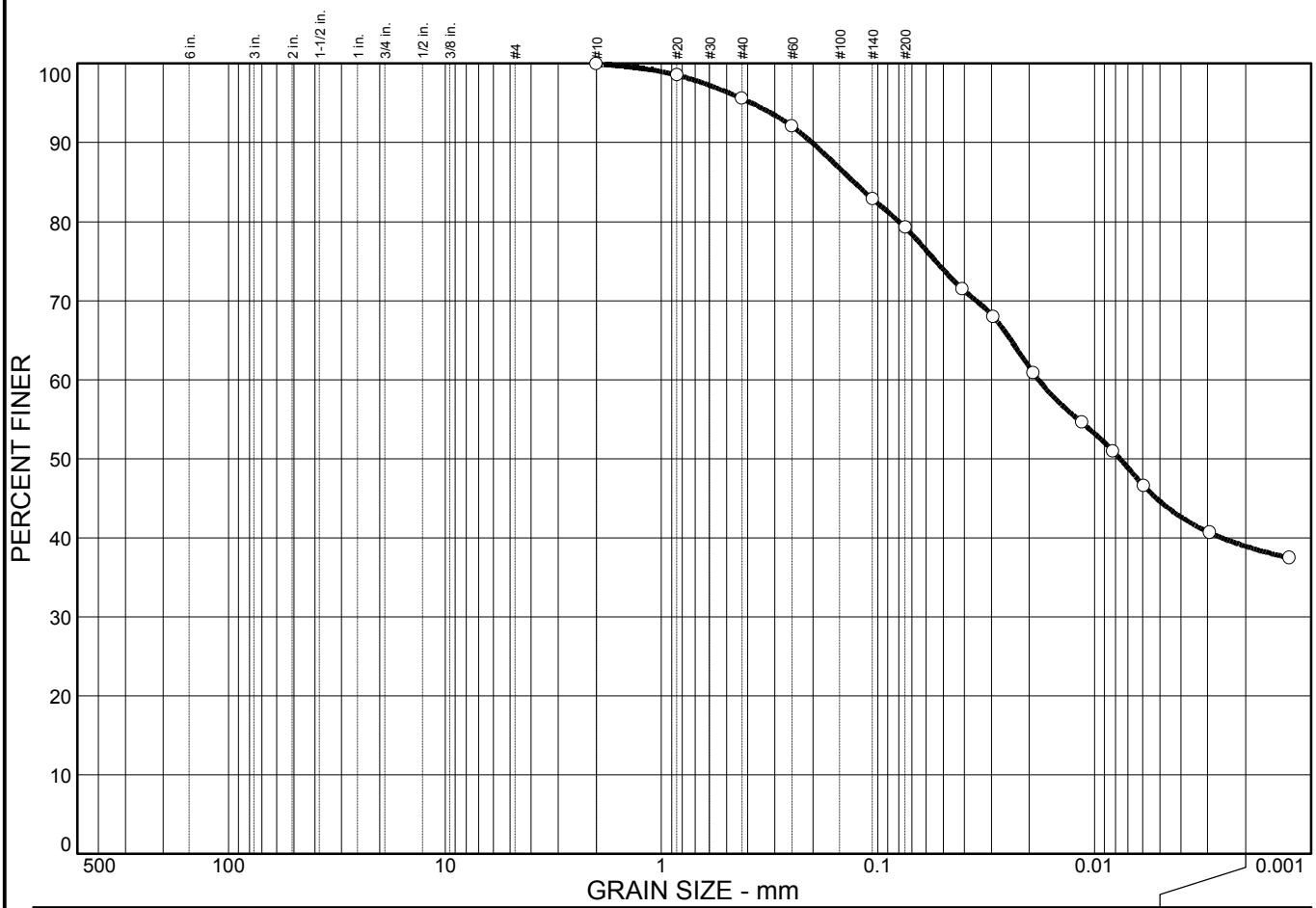
Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		CLAY (CL), dark gray, stiff, moist, low plasticity, with layer of sand.			50/3"			+4.5*
	1		CLAYEY SILT (ML), brown, stiff, moist, low plasticity, with trace sand.			50/6"	10.3		
5	2		SANDY SILT (ML), brown, stiff, moist, no plasticity.			56/6"	11.5		
						52			
10	3								
	4		SILTY SAND (SM), dark brown, very dense, cemented, moist, fine- to medium-grained sand.			66			
15	5								
	6					47			
20			Bottom of boring at 20 feet. No groundwater encountered.						
	7								
25	8								
	9								
30									

APPENDIX B

LABORATORY TEST RESULTS

Particle Size Distribution Reports (2 Pages)
Liquid and Plastic Limit Test Report (1 Page)

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	20.7	40.3	39.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	98.6		
#40	95.6		
#60	92.1		
#140	82.9		
#200	79.3		

* (no specification provided)

Soil Description

Black silty clay with sand

Atterberg Limits

PL= 16 LL= 47 PI= 31

Coefficients

D_{85}= 0.129 D_{60}= 0.0182 D_{50}= 0.0076
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO=

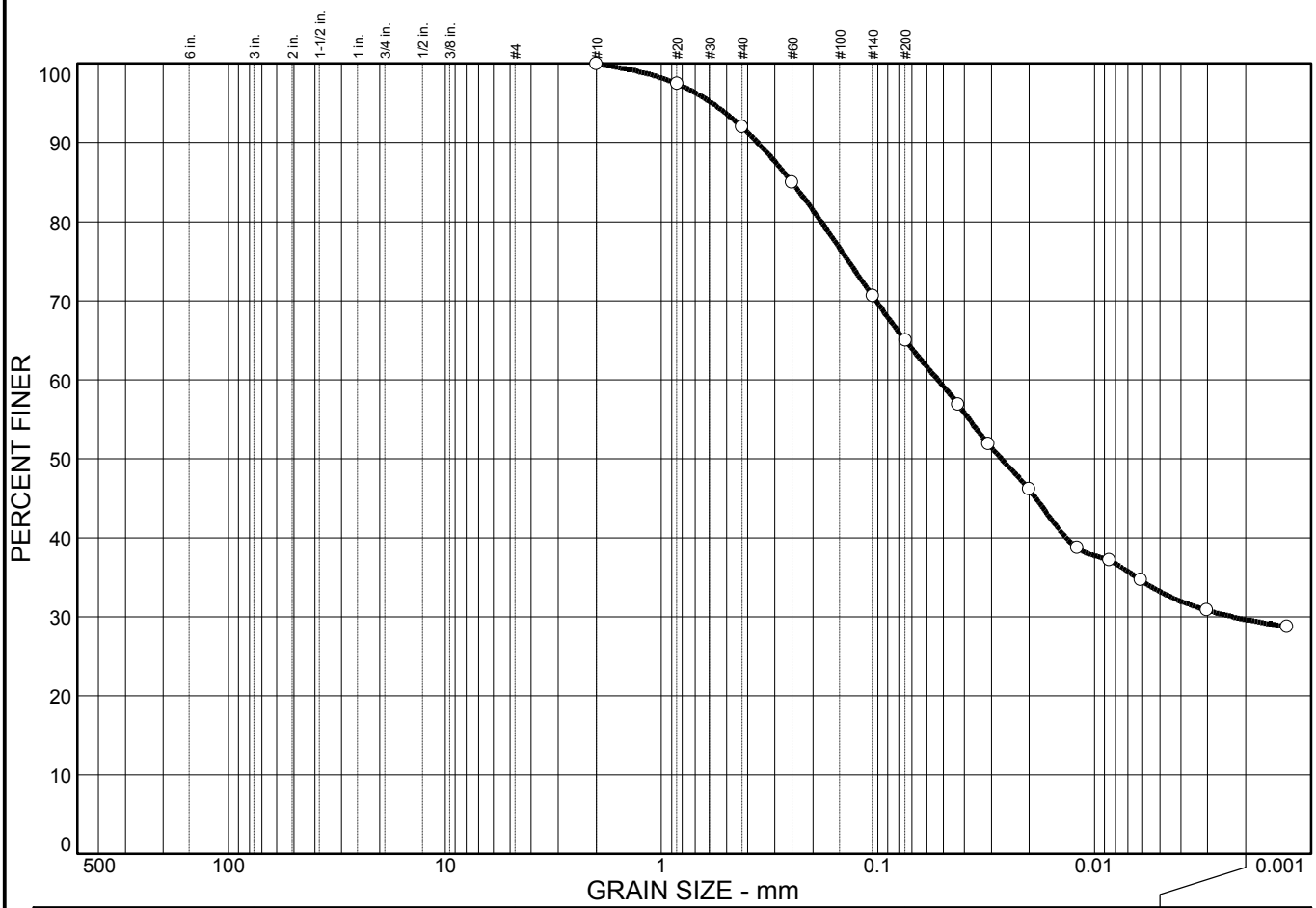
Remarks

Sample No.: B3@1.5 **Source of Sample:** GEX **Date:** 12/14/05
Location: **Elev./Depth:** 1.5 feet

ENGEO INCORPORATED

Client:
Project: Shehadeh Property-Geotechnical Report
Project No: 7103.4.001.01 **Figure**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	35.0	35.3	29.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	97.5		
#40	92.0		
#60	85.0		
#140	70.6		
#200	65.0		

* (no specification provided)

Soil Description

Dark gray sandy clay

Atterberg Limits

PL= 13 LL= 36 PI= 23

Coefficients

D_{85}= 0.250 D_{60}= 0.0529 D_{50}= 0.0269
D_{30}= 0.0022 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO=

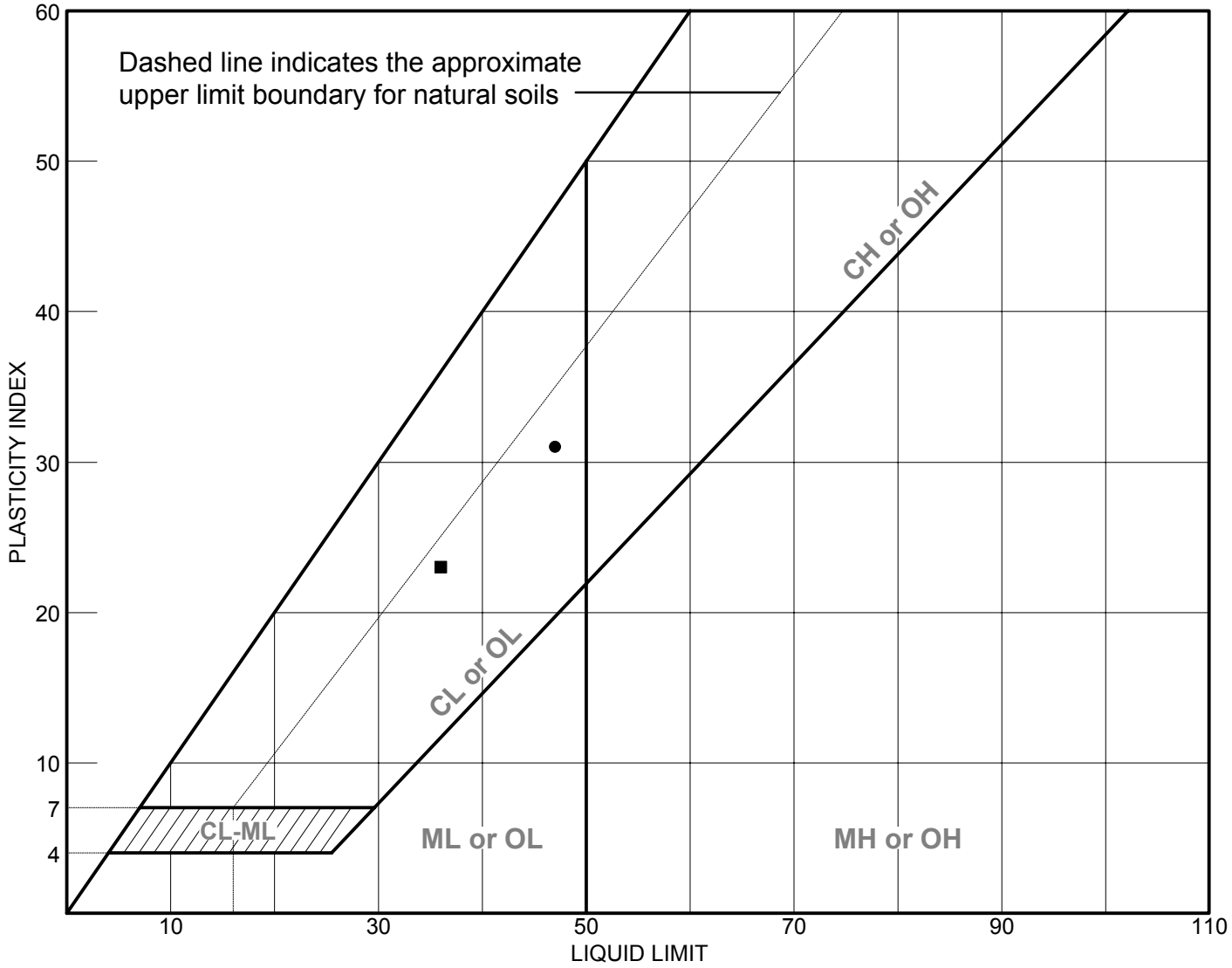
Remarks

Sample No.: B4@2.0 **Source of Sample:** GEX **Date:** 12/14/05
Location: **Elev./Depth:** 2.0 feet

ENGEO INCORPORATED

Client:
Project: Shehadeh Property-Geotechnical Report
Project No: 7103.4.001.01 **Figure**

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	GEX	B3@1.5	1.5 feet		16	47	31	CL
■	GEX	B4@2.0	2.0 feet		13	36	23	CL

LIQUID AND PLASTIC LIMITS TEST REPORT **ENGEO INCORPORATED**	**Client:** **Project:** Shehadeh Property-Geotechnical Report **Project No.:** 7103.4.001.01 **Figure**

APPENDIX C

Guide Contract Specifications

7103.4.001.01
December 17, 2005
Revised March 30, 2006

GUIDE CONTRACT SPECIFICATIONS

PART I - EARTHWORK

PREFACE

These specifications are intended as a guide for the earthwork performed at the subject development project. If there is a conflict between these specifications (including the recommendations of the geotechnical report) and agency or code requirements, it should be brought to the attention of ENGEO and Owner prior to contract bidding.

PART 1 - GENERAL

1.01 WORK COVERED

A. Grading, excavating, filling and backfilling, including trenching and backfilling for utilities as necessary to complete the Project as indicated on the Drawings.

B. Subsurface drainage as indicated on the Drawings.

1.02 CODES AND STANDARDS

A. Excavating, trenching, filling, backfilling, and grading work shall meet the applicable requirements of the Uniform Building Code and the standards and ordinances of state and local governing authorities.

1.03 SUBSURFACE SOIL CONDITIONS

A. The Owners' Geotechnical Exploration report is available for inspection by bidder or Contractor. The Contractor shall refer to the findings and recommendations of the Geotechnical Exploration report in planning and executing his work.

1.04 DEFINITIONS

A. Fill: All soil, rock, or soil-rock materials placed to raise the grades of the site or to backfill excavations.

B. Backfill: All soil, rock or soil-rock material used to fill excavations and trenches.

C. On-Site Material: Soil and/or rock material which is obtained from the site.

D. Imported Material: Soil and/or rock material which is brought to the site from off-site areas.

E. Select Material: On-site and/or imported material which is approved by ENGEO as a specific-purpose fill.

F. Engineered Fill: Fill upon which ENGEO has made sufficient observations and tests to confirm that the fill has been placed and compacted in accordance with specifications and requirements.

G. Degree of Compaction or Relative Compaction: The ratio, expressed as a percentage, of the in-place dry density of the fill and backfill material as compacted in the field to the maximum dry density of the same material as determined by ASTM D-1557 or California 216 compaction test method.

H. Optimum Moisture: Water content, percentage by dry weight, corresponding to the maximum dry density as determined by ASTM D-1557.

I. ENGEO: The project geotechnical engineering consulting firm, its employees or its designated representatives.

J. Drawings: All documents, approved for construction, which describe the Work.

1.05 OBSERVATION AND TESTING

A. All site preparation, cutting and shaping, excavating, filling, and backfilling shall be carried out under the observation of ENGEO, employed and paid for by the Owners. ENGEO will perform appropriate field and laboratory tests to evaluate the suitability of fill material, the proper moisture content for compaction, and the degree of compaction achieved. Any fill that does not meet the specification requirements shall be removed and/or reworked until the requirements are satisfied.

B. Cutting and shaping, excavating, conditioning, filling, and compacting procedures require approval of ENGEO as they are performed. Any work found unsatisfactory or any work disturbed by subsequent operations before approval is granted shall be corrected in an approved manner as recommended by ENGEO.

C. Tests for compaction will be made in accordance with test procedures outlined in ASTM D-1557, as applicable. Field testing of soils or compacted fill shall conform with the applicable requirements of ASTM D-2922.

D. All authorized observation and testing will be paid for by the Owners.

1.06 SITE CONDITIONS

A. Excavating, filling, backfilling, and grading work shall not be performed during unfavorable weather conditions. When the work is interrupted by rain, excavating, filling, backfilling, and grading work shall not be resumed until the site and soil conditions are suitable.

B. Contractor shall take the necessary measures to prevent erosion of freshly filled, backfilled, and graded areas until such time as permanent drainage and erosion control measures have been installed.

PART 2 - PRODUCTS

2.01 GENERAL

A. Contractor shall furnish all materials, tools, equipment, facilities, and services as required for performing the required excavating, filling, backfilling, and grading work, and trenching and backfilling for utilities.

2.02 SOIL MATERIALS

A. Fill

1. Material to be used for engineered fill and backfill shall be free from organic matter and other deleterious substances, and of such quality that it will compact thoroughly without excessive voids when watered and rolled. Excavated on-site material will be considered suitable for engineered fill and backfill if it contains no more than 3 percent organic matter, is free of debris and other deleterious substances and conforms to the requirements specified above. Rocks of maximum dimension in excess of two-thirds of the lift thickness shall be removed from any fill material to the satisfaction of ENGEO.

2. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled as required for later filling and backfilling operations. Conditioning shall consist of

spreading material in layers not to exceed 8 inches and raking free of debris and rubble. Rocks and aggregate exceeding the allowed largest dimension, and deleterious material shall be removed from the site and disposed off site in a legal manner.

3. ENGEO shall be immediately notified if potential hazardous materials or suspect soils exhibiting staining or odor are encountered. Work activities shall be discontinued within the area of potentially hazardous materials. ENGEO environmental personnel will conduct an assessment of the suspect hazardous material to determine the appropriate response and mitigation. Regulatory agencies may also be contacted to request concurrence and oversight. *ENGEO will rely on the Owner, or a designated Owner's representative, to make necessary notices to the appropriate regulatory agencies. The Owner may request ENGEO's assistance in notifying regulatory agencies, provided ENGEO receives Owner's written authorization to expand its scope of services.*

4. ENGEO shall be notified at least 48 hours prior to the start of filling and backfilling operations so that it may evaluate samples of the material intended for use as fill and backfill. All materials to be used for filling and backfilling require the approval of ENGEO.

B. Import Material: Where conditions require the importation of fill material, the material shall be an inert, nonexpansive soil or soil-rock material free of organic matter and meeting the following requirements unless otherwise approved by ENGEO.

Gradation (ASTM D-421):	Sieve Size	Percent Passing
	2-inch	100
	#200	15 - 70
Plasticity (ASTM D-4318):	Liquid Limit	Plasticity Index
	< 30	< 12
Swell Potential (ASTM D-4546B): (at optimum moisture)	Percent Heave	Swell Pressure
	< 2 percent	< 300 psf
Resistance Value (ASTM D-2844):	Minimum 25	
Organic Content (ASTM D-2974):	Less than 2 percent	

A sample of the proposed import material should be submitted to ENGEO for evaluation prior to delivery at the site.

2.03 SAND

A. Sand for sand cushion under slabs and for bedding of pipe in utility trenches shall be a clean and graded, washed sand, free from clay or organic material, suitable for the intended purpose with 90 to 100 percent passing a No. 4 U.S. Standard Sieve, not more than 5 percent passing a No. 200 U.S. Standard Sieve, and generally conforming to ASTM C33 for fine aggregate.

2.04 AGGREGATE DRAINAGE FILL

A. Aggregate drainage fill under concrete slabs and paving shall consist of broken stone, crushed or uncrushed gravel, clean quarry waste, or a combination thereof. The aggregate shall be free from fines, vegetable matter, loam, volcanic tuff, and other deleterious substances. It shall be of such quality that the absorption of water in a saturated surface dry condition does not exceed 3 percent of the oven dry weight of the samples.

B. Aggregate drainage fill shall be of such size that the percentage composition by dry weight as determined by laboratory sieves (U. S. Series) will conform to the following grading:

Sieve Size	Percentage Passing Sieve
1½-inches	100
1-inch	90 - 100
#4	0 - 5

2.05 SUBDRAINS

A. Perforated subdrain pipe of the required diameter shall be installed as shown on the drawings. The pipe(s) shall also conform to these specifications unless otherwise specified by ENGEO in the field.

Subdrain pipe shall be manufactured in accordance with one of the following requirements:

Design depths less than 30 feet

- Perforated ABS Solid Wall SDR 35 (ASTM D-2751)
- Perforated PVC Solid Wall SDR 35 (ASTM D-3034)
- Perforated PVC A-2000 (ASTM F949)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 50 psi minimum stiffness)

Design depths less than 50 feet

- Perforated PVC SDR 23.5 Solid Wall (ASTM D-3034)
- Perforated Sch. 40 PVC Solid Wall (ASTM-1785)
- Perforated ABS SDR 23.5 Solid Wall (ASTM D-2751)
- Perforated ABS DWV/Sch. 40 (ASTM D-2661 and D-1527)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 70 psi minimum stiffness)

Design depths less than 70 feet

- Perforated ABS Solid Wall SDR 15.3 (ASTM D-2751)
- Perforated Sch. 80 PVC (ASTM D-1785)
- Perforated Corrugated Aluminum (ASTM B-745)

B. Permeable Material (Class 2): Class 2 permeable material for filling trenches under, around, and over subdrains, behind building and retaining walls, and for pervious blankets shall consist of clean, coarse sand and gravel or crushed stone, conforming to the following grading requirements:

Sieve Size	Percentage Passing Sieve
1-inch	100
¾-inch	90 - 100
3/8-inch	40 - 100
#4	25 - 40
#8	18 - 33
#30	5 - 15
#50	0 - 7
#200	0 - 3

C. Filter Fabric: All filter fabric shall meet the following Minimum Average Roll Values unless otherwise specified by ENGEO.

Grab Strength (ASTM D-4632).....180 lbs
Mass Per Unit Area (ASTM D-4751).....6 oz/yd^2
Apparent Opening Size (ASTM D-4751).....70-100 U.S. Std. Sieve
Flow Rate (ASTM D-4491).....80 gal/min/ft^2
Puncture Strength (ASTM D-4833).....80 lbs

D. Vapor Retarder: Vapor Retarders shall consist of PVC, LDPE or HDPE impermeable sheeting at least 10 mils thick.

2.06 PERMEABLE MATERIAL (Class 1; Type A)

A. Class 1 permeable material to be used in conjunction with filter fabric for backfilling of subdrain excavations shall conform to the following grading requirements:

Sieve Size	Percentage Passing Sieve
¾-inch	100
½-inch	95 - 100
^{3}/8-inch	70 - 100
#4	0 - 55
#8	0 - 10
#200	0 - 3

PART 3 - EXECUTION

3.01 STAKING AND GRADES

A. Contractor shall lay out all his work, establish all necessary markers, bench marks, grading stakes, and other stakes as required to achieve design grades.

3.02 EXISTING UTILITIES

A. Contractor shall verify the location and depth (elevation) of all existing utilities and services before performing any excavation work.

3.03 EXCAVATION

A. Contractor shall perform excavating as indicated and required for concrete footings, drilled piers, foundations, floor slabs, concrete walks, and site leveling and grading, and provide shoring, bracing, underpinning, cribbing, pumping, and planking as

required. The bottoms of excavations shall be firm undisturbed earth, clean and free from loose material, debris, and foreign matter.

B. Excavations shall be kept free from water at all times. Adequate dewatering equipment shall be maintained at the site to handle emergency situations until concrete or backfill is placed.

C. Unauthorized excavations for footings shall be filled with concrete to required elevations, unless other methods of filling are authorized by ENGEO.

D. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled for later filling and backfilling operations as specified under Section 2.02, "Soil Materials."

E. Abandoned sewers, piping, and other utilities encountered during excavating shall be removed and the resulting excavations shall be backfilled with engineered fill as required by ENGEO.

F. Any active utility lines encountered shall be reported immediately to the Owner's Representative and authorities involved. The Owner and proper authorities shall be permitted free access to take the measures deemed necessary to repair, relocate, or remove the obstruction as determined by the responsible authority or Owner's Representative.

3.04 SUBGRADE PREPARATION

A. All brush and other rubbish, as well as trees and root systems not marked for saving, shall be removed from the site and legally disposed of.

B. Any existing structures, foundations, underground storage tanks, or debris must be removed from the site prior to any building, grading, or fill operations. Septic tanks, including all drain fields and other lines, if encountered, must be totally removed. The resulting depressions shall be properly prepared and filled to the satisfaction of ENGEO.

C. Vegetation and organic topsoil shall be removed from the surface upon which the fill is to be placed and either removed and legally disposed of or stockpiled for later use in approved landscape areas. The surface shall then be scarified to a depth of at least eight inches until the surface is free from ruts, hummocks, or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

D. After the foundation for the fill has been cleared and scarified, it shall be made uniform and free from large clods. The proper moisture content must be obtained by adding water or aerating. The foundation for the fill shall be compacted at the proper moisture content to a relative compaction as specified herein.

3.05 ENGINEERED FILL

A. Select Material: Fill material shall be "Select" or "Imported Material" as previously specified.

B. Placing and Compacting: Engineered fill shall be constructed by approved and accepted methods. Fill material shall be spread in uniform lifts not exceeding 8 inches in uncompacted thickness. Each layer shall be spread evenly, and thoroughly blade-mixed to obtain uniformity of material. Fill material which does not contain sufficient moisture as specified by ENGEO shall be sprinkled with water; if it contains excess moisture it shall be aerated or blended with drier material to achieve the proper water content. Select material and water shall then be thoroughly mixed before being compacted.

C. Unless otherwise specified in the Geotechnical Exploration report, each layer of spread select material shall be compacted to at least 90 percent relative compaction at a moisture content of at least three percent above the optimum moisture content. Minimum compaction in all keyways shall be a minimum of 95 percent with a minimum moisture content of at least 1 percentage point above optimum.

D. Unless otherwise specified in the Geotechnical Exploration report or otherwise required by the local authorities, the upper 6 inches of engineered fill in areas to receive pavement shall be compacted to at least 95 percent relative compaction with a minimum moisture content of at least 3 percentage points above optimum.

E. Testing and Observation of Fill: The work shall consist of field observation and testing to determine that each layer has been compacted to the required density and that the required moisture is being obtained. Any layer or portion of a layer that does not attain the compaction required shall be reworked until the required density is obtained.

F. Compaction: Compaction shall be by sheepsfoot rollers, multiple-wheel steel or pneumatic-tired rollers or other types of acceptable compaction equipment. Rollers shall be of such design that they will be able to compact the fill to the specified compaction. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer must be continuous so that the required compaction may be obtained uniformly throughout each layer.

G. Fill slopes shall be constructed by overfilling the design slopes and later cutting back the slopes to the design grades. No loose soil will be permitted on the faces of the finished slopes.

H. Strippings and topsoil shall be stockpiled as approved by Owner, then placed in accordance with ENGEO's recommendations to a minimum thickness of 6 inches and a maximum thickness of 12 inches over exposed open space cut slopes which are 3:1 or flatter, and track walked to the satisfaction of ENGEO.

I. Final Prepared Subgrade: Finish blading and smoothing shall be performed as necessary to produce the required density, with a uniform surface, smooth and true to grade.

3.06 BACKFILLING

A. Backfill shall not be placed against footings, building walls, or other structures until approved by ENGEO.

B. Backfill material shall be Select Material as specified for engineered fill.

C. Backfill shall be placed in 6-inch layers, leveled, rammed, and tamped in place. Each layer shall be compacted with suitable compaction equipment to 90 percent relative compaction at a moisture content of at least 3 percent above optimum.

3.07 TRENCHING AND BACKFILLING FOR UTILITIES

A. Trenching:

1. Trenching shall include the removal of material and obstructions, the installation and removal of sheeting and bracing and the control of water as necessary to provide the required utilities and services.

2. Trenches shall be excavated to the lines, grades, and dimensions indicated on the Drawings. Maximum allowable trench width shall be the outside diameter of the pipe plus 24 inches, inclusive of any trench bracing.

3. When the trench bottom is a soft or unstable material as determined by ENGEO, it shall be made firm and solid by removing said unstable material to a sufficient depth and replacing it with on-site material compacted to 90 percent minimum relative compaction.

4. Where water is encountered in the trench, the contractor must provide materials necessary to drain the water and stabilize the bed.

B. Backfilling:

1. Trenches must be backfilled within 2 days of excavation to minimize desiccation.

2. Bedding material shall be sand and shall not extend more than 6 inches above any utility lines.

3. Backfill material shall be select material.

4. Trenches shall be backfilled as indicated or required and compacted with suitable equipment to 90 percent minimum relative compaction at the required moisture content.

3.08 SUBDRAINS

A. Trenches for subdrain pipe shall be excavated to a minimum width equal to the outside diameter of the pipe plus at least 12 inches and to a depth of approximately 2 inches below the grade established for the invert of the pipe, or as indicated on the Drawings.

B. The space below the pipe invert shall be filled with a layer of Class 2 permeable material, upon which the pipe shall be laid with perforations down. Sections shall be joined as recommended by the pipe manufacturer.

C. Rocks, bricks, broken concrete, or other hard material shall not be used to give intermediate support to pipes. Large stones or other hard objects shall not be left in contact with the pipes.

D. Excavations for subdrains shall be filled as required to fill voids and prevent settlement without damaging the subdrain pipe. Alternatively, excavations for subdrains may be filled with Class 1 permeable material (as defined in Section 2.06) wrapped in Filter Fabric (as defined in Section 2.05).

3.09 AGGREGATE DRAINAGE FILL

A. ENGEO shall approve finished subgrades before aggregate drainage fill is installed.

B. Pipes, drains, conduits, and any other mechanical or electrical installations shall be in place before any aggregate drainage fill is placed. Backfill at walls to elevation of drainage fill shall be in place and compacted.

C. Aggregate drainage fill under slabs and concrete paving shall be the minimum uniform thickness after compaction of dimensions indicated on Drawings. Where not indicated, minimum thickness after compaction shall be 4 inches.

D. Aggregate drainage fill shall be rolled to form a well-compacted bed.

E. The finished aggregate drainage fill must be observed and approved by ENGEO before proceeding with any subsequent construction over the compacted base or fill.

3.10 SAND CUSHION

A. A sand cushion shall be placed over the vapor retarder membrane under concrete slabs on grade. Sand cushion shall be placed in uniform thickness as indicated on the Drawings. Where not indicated, the thickness shall be 2 inches.

3.11 FINISH GRADING

A. All areas must be finish graded to elevations and grades indicated on the Drawings. In areas to receive topsoil and landscape planting, finish grading shall be performed to a uniform 6 inches below the grades and elevations indicated on the Drawings, and brought to final grade with topsoil.

3.12 DISPOSAL OF WASTE MATERIALS

A. Excess earth materials and debris shall be removed from the site and disposed of in a legal manner. Location of dump site and length of haul are the Contractor's responsibility.

PART II - GEOGRID SOIL REINFORCEMENT

1. DESCRIPTION:

Work shall consist of furnishing geogrid soil reinforcement for use in construction of reinforced soil slopes and retention systems.

2. GEOGRID MATERIAL:

2.1 The specific geogrid material shall be preapproved by ENGEO.

2.2 The geogrid shall be a regular network of integrally connected polymer tensile elements with aperture geometry sufficient to permit significant mechanical interlock with the surrounding soil or rock. The geogrid structure shall be dimensionally stable and able to retain its geometry under construction stresses and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.

2.3 The geogrids shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated, as listed in Table I.

2.4 Certifications: The Contractor shall submit a manufacturer's certification that the geogrids supplied meet the respective index criteria set when geogrid was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply test data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the geogrid upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geogrid shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geogrid will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geogrid

damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

3.2 On-Site Representative: Geogrid material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Geogrid reinforcement may be joined with mechanical connections or overlaps as recommended and approved by the Manufacturer. Joints shall not be placed within 6 feet of the slope face, within 4 feet below top of slope, nor horizontally or vertically adjacent to another joint.

3.4 Geogrid Placement: The geogrid reinforcement shall be installed in accordance with the manufacturer's recommendations. The geogrid reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geogrid reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. However, if the Contractor is unable to complete a required length with a single continuous length of geogrid, a joint may be made with the Manufacturer's approval. Only one joint per length of geogrid shall be allowed. This joint shall be made for the full width of the strip by using a similar material with similar strength. Joints in geogrid reinforcement shall be pulled and held taut during fill placement.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geogrid reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geogrid reinforcement required for immediately pending work to prevent undue damage. After a layer of geogrid reinforcement has been placed, the next succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geogrid reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geogrid reinforcement and soil.

Geogrid reinforcement shall be placed to lay flat and pulled tight prior to backfilling. After a layer of geogrid reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geogrid reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geogrid reinforcement before at least six inches of soil have been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geogrid reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geosynthetic reinforcement at slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geogrid reinforcement shall be placed directly on the compacted horizontal fill surface. Geogrid reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geogrid reinforcement shall be verified by ENGEO.

Table I
Allowable Geogrid Strength With Various Soil Types
For Geosynthetic Reinforcement In
Mechanically Stabilized Earth Slopes

(Geogrid Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)

SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T_a (lb/ft)*		
	GEOGRID Type I	GEOGRID Type II	GEOGRID Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800

* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.

** Unified Soil Classifications.

PART III - GEOTEXTILE SOIL REINFORCEMENT

1. DESCRIPTION:

Work shall consist of furnishing geotextile soil reinforcement for use in construction of reinforced soil slopes.

2. GEOTEXTILE MATERIAL:

2.1 The specific geotextile material and supplier shall be preapproved by ENGEO.

2.2 The geotextile shall have a high tensile modulus and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.

2.3 The geotextiles shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated as listed in Table II.

2.4 Certification: The Contractor shall submit a manufacturer's certification that the geotextiles supplied meet the respective index criteria set when geotextile was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply the data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

3.1 Delivery, Storage and Handling: Contractor shall check the geotextile upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geotextile shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geotextile will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geotextile damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

3.2 On-Site Representative: Geotextile material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Geotextile Placement: The geotextile reinforcement shall be installed in accordance with the manufacturer's recommendations. The geotextile reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geotextile reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. Joints shall not be used with geotextiles.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geotextile reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geotextile reinforcement required for immediately pending work to prevent undue damage. After a layer of geotextile reinforcement has been placed, the succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geotextile reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geotextile reinforcement and soil.

Geosynthetic reinforcement shall be placed to lay flat and be pulled tight prior to backfilling. After a layer of geotextile reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geotextile reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geotextile reinforcement before at least six inches of soil has been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geotextile reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geotextile reinforcement as slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geotextile reinforcement shall be placed directly on the compacted horizontal fill surface. Geotextile reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geotextile reinforcement shall be verified by ENGEO.

Table II
Allowable Geotextile Strength
With Various Soil Types
For Geosynthetic Reinforcement In
Mechanically Stabilized Earth Slopes

(Geotextile Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)

SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T_a (lb/ft)*		
	GEOTEXTILE Type I	GEOTEXTILE Type II	GEOTEXTILE Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800

* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.

** Unified Soil Classifications.

PART IV - EROSION CONTROL MAT OR BLANKET

1. DESCRIPTION:

Work shall consist of furnishing and placing a synthetic erosion control mat and/or degradable erosion control blanket for slope face protection and lining of runoff channels.

2. EROSION CONTROL MATERIALS:

2.1 The specific erosion control material and supplier shall be pre-approved by ENGEO.

2.2 Certification: The Contractor shall submit a manufacturer's certification that the erosion mat/blanket supplied meets the criteria specified when the material was approved by ENGEO. The manufacturer's certification shall include a submittal package of documented test results that confirm the property values. In case of a dispute over validity of values, the Contractor will supply property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for conformance determinations.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the erosion control material upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the erosion mat shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the erosion mat/blanket shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed by cutting OUT a section of the mat. The remaining ends should be overlapped and secured with ground anchors. Any erosion mat/blanket damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.

3.2 On-Site Representative: Erosion control material suppliers shall provide a qualified and experienced representative on site, for a minimum of one day, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criteria will apply to construction of the initial slope only. The representative shall be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Placement: The erosion control material shall be placed and anchored on a smooth graded, firm surface approved by the Engineer. Anchoring terminal ends of the erosion control material shall be accomplished through use of key trenches. The material in the trenches shall be anchored to the soil on maximum 1½ foot centers. Topsoil, if required by construction drawings, placed over final grade prior to installation of the erosion control material shall be limited to a depth not exceeding 3 inches.

3.4 Erosion control material shall be anchored, overlapped, and otherwise constructed to ensure performance until vegetation is well established. Anchors shall be as designated on the construction drawings, with a minimum of 12 inches length, and shall be spaced as designated on the construction drawings, with a maximum spacing of 4 feet.

3.5 Soil Filling: If noted on the construction drawings, the erosion control mat shall be filled with a fine grained topsoil, as recommended by the manufacturer. Soil shall be lightly raked or brushed on/into the mat to fill the mat voids or to a maximum depth of 1 inch.

PART V - GEOSYNTHETIC DRAINAGE COMPOSITE

1. DESCRIPTION:

Work shall consist of furnishing and placing a geosynthetic drainage system as a subsurface drainage medium for reinforced soil slopes.

2. DRAINAGE COMPOSITE MATERIALS:

2.1 The specific drainage composite material and supplier shall be preapproved by ENGEO.

2.2 The drain shall be of composite construction consisting of a supporting structure or drainage core material surrounded by a geotextile. The geotextile shall encapsulate the drainage core and prevent random soil intrusion into the drainage structure. The drainage core material shall consist of a three dimensional polymeric material with a structure that permits flow along the core laterally. The core structure shall also be constructed to permit flow regardless of the water inlet surface. The drainage core shall provide support to the geotextile. The fabric shall meet the minimum property requirements for filter fabric listed in Section 2.05C of the Guide Earthwork Specifications.

2.3 A geotextile flap shall be provided along all drainage core edges. This flap shall be of sufficient width for sealing the geotextile to the adjacent drainage structure edge to prevent soil intrusion into the structure during and after installation. The geotextile shall cover the full length of the core.

2.4 The geocomposite core shall be furnished with an approved method of constructing and connecting with outlet pipes or weepholes as shown on the plans. Any fittings shall allow entry of water from the core but prevent intrusion of backfill material into the core material.

2.5 Certification and Acceptance: The Contractor shall submit a manufacturer's certification that the geosynthetic drainage composite meets the design properties and respective index criteria measured in full accordance with all test methods and standards specified. The manufacturer's certification shall include a submittal package of documented test results that confirm the design values. In case of dispute over validity of design values, the Contractor will supply design property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for determining conformance.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the geosynthetic drainage composite upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geosynthetic drainage composite shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regards to protection from direct sunlight must also be followed. At the time of installation, the geosynthetic drainage composite shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed or repaired. Any geosynthetic drainage composite damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.

3.2 On-Site Representative: Geosynthetic drainage composite material suppliers shall provide a qualified and experienced representative on site, for a minimum of one half day, to assist the Contractor and ENGEO personnel at the start of construction with directions on the use of drainage composite. If there is more than one application on a project, this criterion will apply to construction of the initial application only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining applications.

3.3 Placement: The soil surface against which the geosynthetic drainage composite is to be placed shall be free of debris and inordinate irregularities that will prevent intimate contact between the soil surface and the drain.

3.4 Seams: Edge seams shall be formed by utilizing the flap of the geotextile extending from the geocomposite's edge and lapping over the top of the fabric of the adjacent course. The fabric flap shall be securely fastened to the adjacent fabric by means of plastic tape or non-water-soluble construction adhesive, as recommended by the supplier. Where vertical splices are necessary at the end of a geocomposite roll or panel, an 8-inch-wide continuous strip of geotextile may be placed, centering over the seam and continuously fastened on both sides with plastic tape or non-water-soluble construction adhesive. As an alternative, rolls of geocomposite drain material may be joined together by turning back the fabric at the roll edges and interlocking the cuspidations approximately 2 inches. For overlapping in this manner, the fabric shall be lapped and tightly taped beyond the seam with tape or adhesive. Interlocking of the core shall always be made with the upstream edge on top in the direction of water flow. To prevent soil intrusion, all exposed edges of the geocomposite drainage core edge must be covered. Alternatively, a 12-inch-wide strip of fabric may be utilized in the same manner, fastening it to the exposed fabric 8 inches in from the edge and folding the remaining flap over the core edge.

3.5 Soil Fill Placement: Structural backfill shall be placed immediately over the geocomposite drain. Care shall be taken during the backfill operation not to damage the geotextile surface of the drain. Care shall also be taken to avoid excessive settlement of the backfill material. The geocomposite drain, once installed, shall not be exposed for more than seven days prior to backfilling.

APPENDIX G
SEWER STUDY

SEWER STUDY

ROBLA ESTATES

City of Sacramento
March 12, 2021

Prepared by:

MICHAEL T ROBERTSON
BAKER-WILLIAMS ENGINEERING GROUP
6020 Rutland Drive, Suite #19
Carmichael, California 95608
PH: 916-331-4336
Fax: 916-331-4430

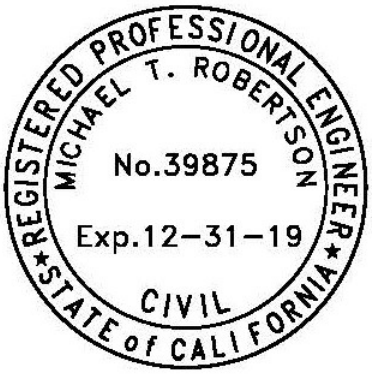


TABLE OF CONTENTS

TITLE **PAGE**

I. INTRODUCTION AND BACKGROUND 3

II. SEWER SYSTEM ANALYSIS .....ERROR! BOOKMARK NOT DEFINED.

III. SEWER CALCULATIONS .....ERROR! BOOKMARK NOT DEFINED.

Appendix

A) Sewer Shed Map
B) Sewer Calculations

I. Introduction and Background

The project is an approved 178 lot residential subdivision located on the east side of Rio Linda Blvd. south of Robla Creek and north of Claire Ave. and Marysville Blvd. within the city limits of Sacramento, see Figure 1. There is an existing 6" sewer line on the west side of Rio Linda Blvds that connects to a 10" sewer line which proceeds to the east to an existing 48" sewer main to the south of the project. The existing 6" sewer line in Rio Linda Blvd. will be abandoned and replaced with a new 10" sewer line. The new 10" sewer line will run up the west side of Rio Linda Blvd. to serve the proposed and future projects.

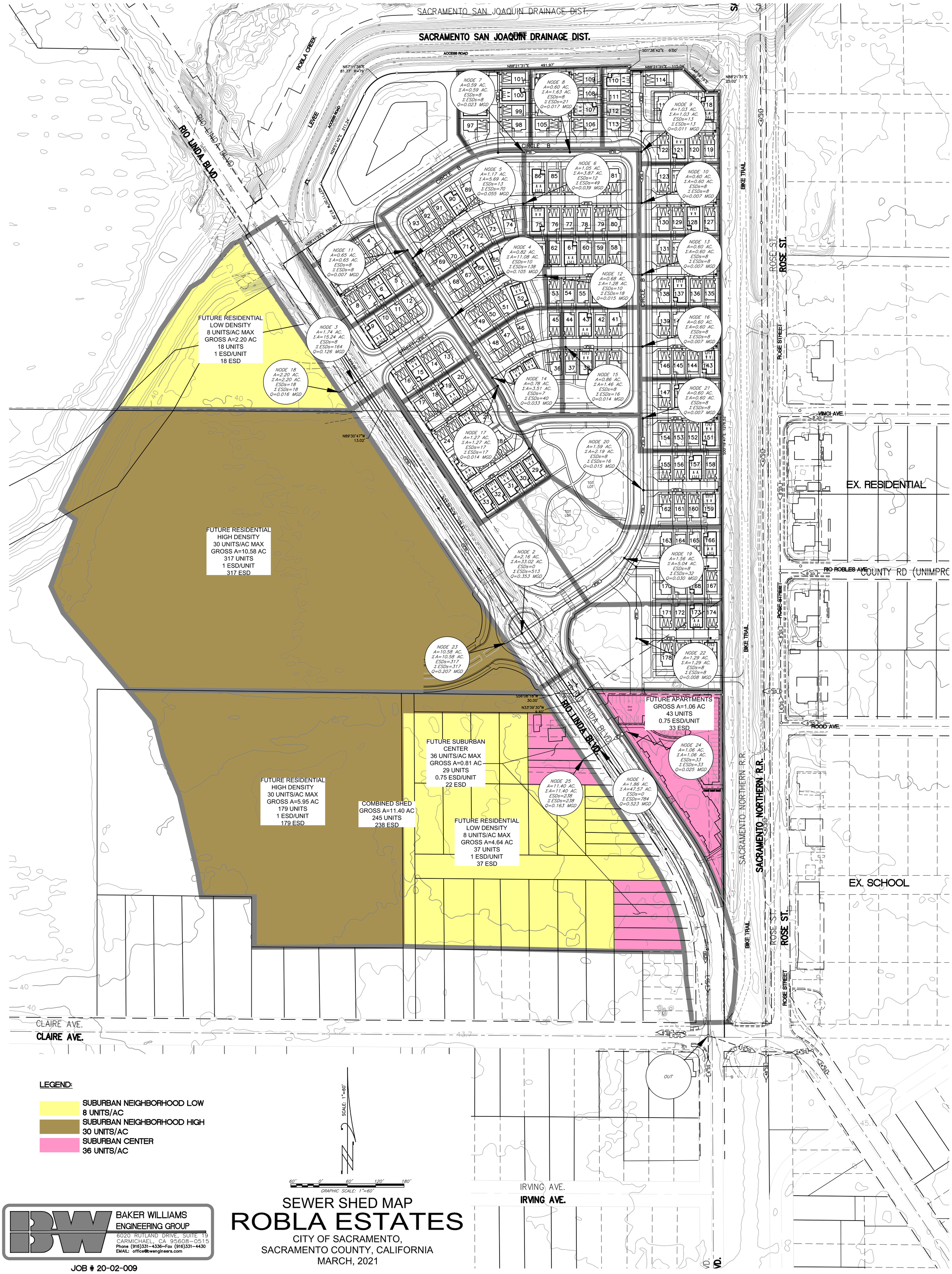
Figure 1 – Project Site

II. Sewer System Analysis The existing 6” sewer line located on the west side of Rio Linda Blvd is too small to serve the project therefore a new 10” sewer line will be necessary to serve the proposed and future projects. The new 10” sewer line will connect in to the existing manhole within the intersection of Rio Linda Blvd., Claire Ave., and Marysville Blvd. The proposed 10” sewer line has been analyzed to ensure the line will meet capacity requirements for the proposed project as well as future projects that the line will serve. The proposed 178 lot subdivision will be built on a vacant 20.55 acre lot. The vacant lot is labeled as a medium density suburban neighborhood in the City of Sacramento 2035 General Plan (GP). There is a future 1.29 acre, 43 unit apartment site to the south of the project which is listed as a suburban center in the GP. The proposed sewer line in Rio Linda Blvd. will also serve future development to the west of the proposed project. The GP was used to determine the future development’s impact on the sewer system. The future parcels are zoned for a combination of low density residential, high density residential, and suburban center. The maximum unit per acre shown in the GP were used for sewer calculation for worst case scenario to ensure the proposed sewer system has the capacity for the future development. See Appendix A for the Sewer Shed Map, which shows color coordinated future land uses based on the GP.

III. Sewer Calculations Proposed sewer flows were calculated based on the City of Sacramento Design and Procedures Manual Section 9, Sewer Collection Systems (DPM). According to Table 9-1 of the DPM the maximum d/D for 8” and 10” is 0.70. The maximum d/D of 0.70 was used to determine the maximum allowable peak wet weather flow for each pipe based on diameter and slope. The other requirement stated in the DPM was that the slope of the sewer line should be increase to ensure a flow velocity of at least 1 ft/sec. All pipe slopes have been increased to ensure that flow velocities do not drop below 1 ft/sec. See Appendix B for Sewer Calculations.

APPENDIX A

SEWER SHED MAP



2002009-SEWER-SHED-MAP

APPENDIX B

SEWER CALCULATIONS

BAKER WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE #19
CARMICHAEL CA 95608
916-331-4336

ROBLA ESTATES SEWER CALCULATIONS

FLOW ACCUMULATIONS BASED ON PROPOSED AND FUTURE DEVELOPMENTS

		SHED DATA				FLOW CALCS								PIPE DATA						RESULTS	
		Gross Area	ESD	Σ Gross Area	Σ ESD	Q_{ADWF}	PF	Q_{PDWF}	$Q_{I/I}$	Q_{PWWF}	Q_{ADWF}	Q_{PWWF}	Q_{MAX}	LENGTH	DIA.	SLOPE	F/L	RIM ELEV.	DEPTH F/L	V_{ADWF}	d/D
FROM	TO	(Ac)		(Acres)		(MGD)		(MGD)		(MGD)	(cfs)	(cfs)	(cfs)	(FT)	(IN.)		(FT)	(FT)	(FT)	(FT/S)	
9	8	1.03	13	1.03	13	0.004	2.32	0.009	0.002	0.011	0.006	0.017	1.244	152	8	0.0150	32.65	38.70	6.0	1.0	0.045
8	7	0.60	8	1.63	21	0.007	2.25	0.015	0.003	0.017	0.010	0.027	1.015	97	8	0.0100	30.37	38.70	8.3	1.0	0.065
7	6	0.59	8	2.22	29	0.009	2.21	0.020	0.004	0.023	0.014	0.036	0.850	109	8	0.0070	29.40	38.50	9.1	1.0	0.081
6	5	1.05	12	3.87	49	0.015	2.15	0.033	0.006	0.039	0.024	0.060	0.717	266	8	0.0050	28.64	39.30	10.7	1.1	0.114
5	4	1.17	13	5.69	70	0.022	2.11	0.046	0.009	0.055	0.034	0.085	0.600	151	8	0.0035	27.31	38.30	11.0	1.1	0.147
4	3	0.82	10	11.30	138	0.043	2.03	0.087	0.018	0.105	0.066	0.162	0.600	243	8	0.0035	26.78	36.50	9.7	1.3	0.204
3	2	1.74	8	15.24	164	0.051	2.01	0.102	0.024	0.126	0.078	0.195	0.918	638	10	0.0025	25.93	37.50	11.6	1.2	0.180
2	1	2.16	0	33.02	513	0.159	1.88	0.300	0.053	0.353	0.246	0.545	0.918	295	10	0.0025	24.34	40.00	15.7	1.6	0.322
1	OUT	1.86	0	47.57	784	0.243	1.84	0.447	0.076	0.523	0.376	0.810	0.918	668	10	0.0025	23.60	41.40	17.8	1.8	0.408
OUT																	21.93	44.63	22.7		
10	6	0.60	8	0.60	8	0.002	2.38	0.006	0.001	0.007	0.004	0.011	1.435	251	8	0.0200	33.66	40.00	6.3	1.0	0.034
11	5	0.65	8	0.65	8	0.002	2.38	0.006	0.001	0.007	0.004	0.011	1.435	21	8	0.0200	27.73	38.40	10.7	1.0	0.034
13	12	0.60	8	0.60	8	0.002	2.38	0.006	0.001	0.007	0.004	0.011	1.435	205	8	0.0200	33.08	38.20	5.1	1.0	0.034
12	4	0.68	10	1.28	18	0.006	2.27	0.013	0.002	0.015	0.009	0.023	1.015	220	8	0.0100	28.98	37.20	8.2	1.0	0.060
16	15	0.60	8	0.60	8	0.002	2.38	0.006	0.001	0.007	0.004	0.011	1.435	163	8	0.0200	32.53	37.50	5.0	1.0	0.034
15	14	0.86	8	1.46	16	0.005	2.29	0.011	0.002	0.014	0.008	0.021	1.015	172	8	0.0100	29.27	37.20	7.9	1.0	0.057
14	4	0.78	7	3.51	40	0.012	2.17	0.027	0.006	0.033	0.019	0.050	0.717	153	8	0.0050	27.55	36.30	8.8	1.0	0.102
17	14	1.27	17	1.27	17	0.005	2.28	0.012	0.002	0.014	0.008	0.022	1.015	148	8	0.0100	29.03	36.50	7.5	1.0	0.057
18	3	2.20	18	2.20	18	0.005	2.28	0.012	0.004	0.016	0.008	0.025	1.015	43	8	0.0100	26.36	36.00	9.6	1.0	0.057
21	20	0.60	8	0.60	8	0.002	2.38	0.006	0.001	0.007	0.004	0.011	1.435	152	8	0.0200	30.78	36.00	5.2	1.0	0.034
20	19	1.59	8	2.19	16	0.005	2.29	0.011	0.004	0.015	0.008	0.023	1.015	160	8	0.0100	27.74	36.80	9.1	1.0	0.057
19	2	1.56	8	5.04	32	0.010	2.20	0.022	0.008	0.030	0.015	0.046	0.850	258	8	0.0070	26.14	35.50	9.4	1.0	0.084
22	19	1.29	8	1.29	8	0.002	2.38	0.006	0.002	0.008	0.004	0.012	1.435	152	8	0.0200	29.18	38.00	8.8	1.0	0.034
23	2	10.58	317	10.58	317	0.098	1.94	0.190	0.017	0.207	0.152	0.321	0.600	43	8	0.0035	24.49	38.00	13.5	1.6	0.312
24	1	1.29	33	1.29	33	0.010	2.20	0.022	0.002	0.025	0.016	0.038	0.717	66	8	0.0050	23.93	39.00	15.1	1.0	0.095
25	1	11.40	238	11.40	238	0.074	1.97	0.145	0.018	0.163	0.114	0.253	0.600	43	8	0.0035	23.75	41.00	17.2	1.5	0.273

COMMENTS:
1.) FLOW BASED ON CITY OF SAC DESIGN PROCEDURE MANUAL
2.) Q_{ADWF} = 310 GPD/ESD
3.) PF = 1.7 * Q_{ADWF} ^ -0.056
4.) Q_{PDWF} = Q_{ADWF} * PF
5.) $Q_{I/I}$ = 1600 GPD/AC.
6.) Q_{PWWF} = Q_{PDWF} + $Q_{I/I}$
7.) V_{ADWF} = Q_{ADWF} / A

APPENDIX H
WATER STUDY

WATER STUDY

ROBLA ESTATES

City of Sacramento
February 10, 2021

Prepared by:

MICHAEL T ROBERTSON
BAKER-WILLIAMS ENGINEERING GROUP
6020 Rutland Drive, Suite #19
Carmichael, California 95608
PH: 916-331-4336
Fax: 916-331-4430

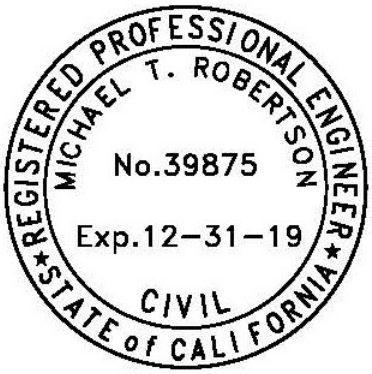


TABLE OF CONTENTS

TITLE **PAGE**

I. INTRODUCTION 3

II. BACKGROUND 4

III. LAND USE AND DEMAND PROJECTIONS 4

IV. WATER SYSTEM DEFINITION AND LEVEL OF SERVICE 4

V. HYDRAULIC MODEL RESULTS AND CONCLUSIONS 5

VI. FINDINGS 6

Appendix

A) Water System Layout
B) Run Model A, Fire flow with Maximum Day Demand
C) Run Model B, Average Day Demand
D) Run Model C, Maximum Day Demand
E) Run Model D, Peak Hour Demand
F) City Water Supply Test for Project
G) City of Sacrament SB 610/SB 221 Water Supply Assessment and Certification Form

I. Introduction

The purpose of this report is to analyze the proposed water distribution system capabilities and establish the available system demands to justify the proposed water distribution system pipe sizes for fire flow protection. The Robla Estates project area is located on the east side of Rio Linda Blvd. south of Robla Creek, and north of Claire Ave. and Marysville Blvd. within the city limits of Sacramento (See Figure Below).

Figure 1 - Vicinity Map

This study is modeled using CivilCAD program software which uses Hazen-Williams formula to ensure that the proposed system meets the parameters set forth by the City of Sacramento County.

II. Background

A topographic survey was conducted and is based on NAVD 88 Datum with elevations of the project area range from 32 feet to 45 feet with and average elevation of 37 feet. The water system provided to the project is supplied and maintained by the City of Sacramento Department of Utilities.

III. Land Use and Demand Projections

The project area is zoned for agriculture, and is proposed as a residential subdivision. Surrounding areas are zoned for a combination of standard single family, Multi-family, and agricultural.

The proposed project will be a 178 lot (R-1A) single family subdivision with 178 water services. For a medium density residential development the average annual water demand is 0.39 AF/year/dwelling unit according to City of Sacrament SB 610/SB 221 Water Supply Assessment and Certification Form. The total demand for the 20.55 acre project would be 69.42 AF/year. There will also be a future apartment site to the south which will consist of a single water service which will service 47 apartment units. For a high density residential development the average annual water demand is 0.12 AF/year/dwelling unit according to City of Sacrament SB 610/SB 221 Water Supply Assessment and Certification Form. The future apartment site with a demand of 5.64 AF/year, or 3.20 gpm, will be analyzed as existing for this report at Node 1. See appendix G for City of Sacrament SB 610/SB 221 Water Supply Assessment and Certification Form. Through unit analysis the demand for the proposed subdivision is converted into design parameters shown in Table 1 below.

Demand	Whole Project (gal/day)	Per Lot (gal/day)	Per Lot (gpm)
Average Day	61,974	350	0.24
Maximum Day	123,948	700	0.48
Peak Hour	161,131	910	0.62

Table 1 - Project Demands

IV. Water System Definition and Level of Service

The water system provided to the project is supplied and maintained by the City of Sacrament. The existing water system consists of a 12” water main on the west side of Rio Linda Boulevard which dead ends at a fire hydrant to the south of the project, as well as an 8” water main within Rose Street to the east of the project. The proposed water system will connect at the existing fire hydrant to continue up Rio Linda Blvd. with a 12” water main. The proposed water main will serve the proposed project with 8” water lines which will loop the system by connecting in to the 8” water line within Rose Street.

The existing water system within Rio Linda Blvd is at an approximate elevation of 40 feet, and the water system within Rose Street is at an approximate elevation of 36 feet. With a design pressure of 32 psi as provided by the City of Sacramento, the hydraulic grade line of the system within Rio Linda Blvd is at an elevation of 113.6

feet, and the hydraulic grade line within Rose Street is 109.6 feet. The proposed water system was modeled using CivilCad analysis program, which uses Hazen-Williams formulas for water distribution systems and a coefficient value of 130. The system model was ran according to the City of Sacramento demands listed as follows: Fire flow demand of 1,500 gallons per minute (gpm) which exceeds the California Building Code (CBC) minimum flow of 1,000 gpm for a sprinklered building size up to 3,600 square feet (sf); a proposed residential max day demand of 0.48 gpm was used for each residence on the system, for a total system demand of 1590.64 gpm, including future demands. The 1,500 gpm was placed at the most remote hydrant (Node 9 at 35 ft. elevation), for a worst case scenario analysis. The fire flow plus max day demand is the worst case scenario for this project, so it is the only scenario that is modeled. If this model meets the max velocity of 10 fps and minimum pressure of 20 psi in the distribution mains, then the system will work for all other scenarios.

V. Hydraulic Model Results and Conclusions

Run Model A, Fire flow with Maximum Day Demand.

With the existing system capabilities of supplying the minimum required demands as set forth by the City of Sacramento, it is determined that the proposed system could supply approximately 1,500 gpm of fire flow at Node 9 with the Maximum Day residential demand for a 2 hour duration without falling below a minimum residual pressure of 20 psi, or above maximum velocity of 10 fps. The maximum allowable head loss per 1000 ft is 10 ft, which is met. Results for 1500gpm fire flow demand can be seen in Appendix A. A summary is listed in Table 2.

Min Pressure (psi)	Node with Min Pressure	Max Velocity (fps)	Pipe with Max Velocity	Max HL/1000 ft. (ft/kft)	Pipe with Max HL/1000 ft.
29.15	9	6.26	12	17.61	12

Table 2 – 1500gpm Fire Flow Demand Result Summary

Run Model B, Average Day Demand.

The Average Day residential demand results are shown in Appendix B. This model successfully runs without falling below a minimum residual pressure of 30 psi and minimum velocity of 0.1 fps, or above maximum velocity of 5 fps. A summary is listed in Table 3.

Min Pressure (psi)	Node with Min Pressure	Min Velocity (fps)	Pipe with Min Velocity	Max Velocity (fps)	Pipe with Max Velocity
32.63	7	0.19	5	3.90	6

Table 3 – Average Day Demand Result Summary

Run Model C, Maximum Day Demand.

The Maximum Day residential demand results are shown in Appendix C. This model successfully runs without falling below the minimum of 30 psi minimum residual pressure, and above a maximum velocity of 7 ft/s. A summary is listed in Table 4.

Max Velocity (fps)	Pipe with Max Velocity	Min Pressure (psi)	Pipe with Min Pressure
3.78	6	32.57	7

Table 4 – Maximum Day Demand Result Summary

Run Model D, Peak Hour Demand.

The Peak Hour Demand results are shown in Appendix D. This model successfully runs without falling below the minimum residual pressure of 30 psi. The model also successfully runs without rising above a maximum velocity of 7 ft/s. A summary is listed in Table 5.

Max Velocity (fps)	Pipe with Max Velocity	Min Pressure (psi)	Node with Min Pressure
3.71	6	32.53	7

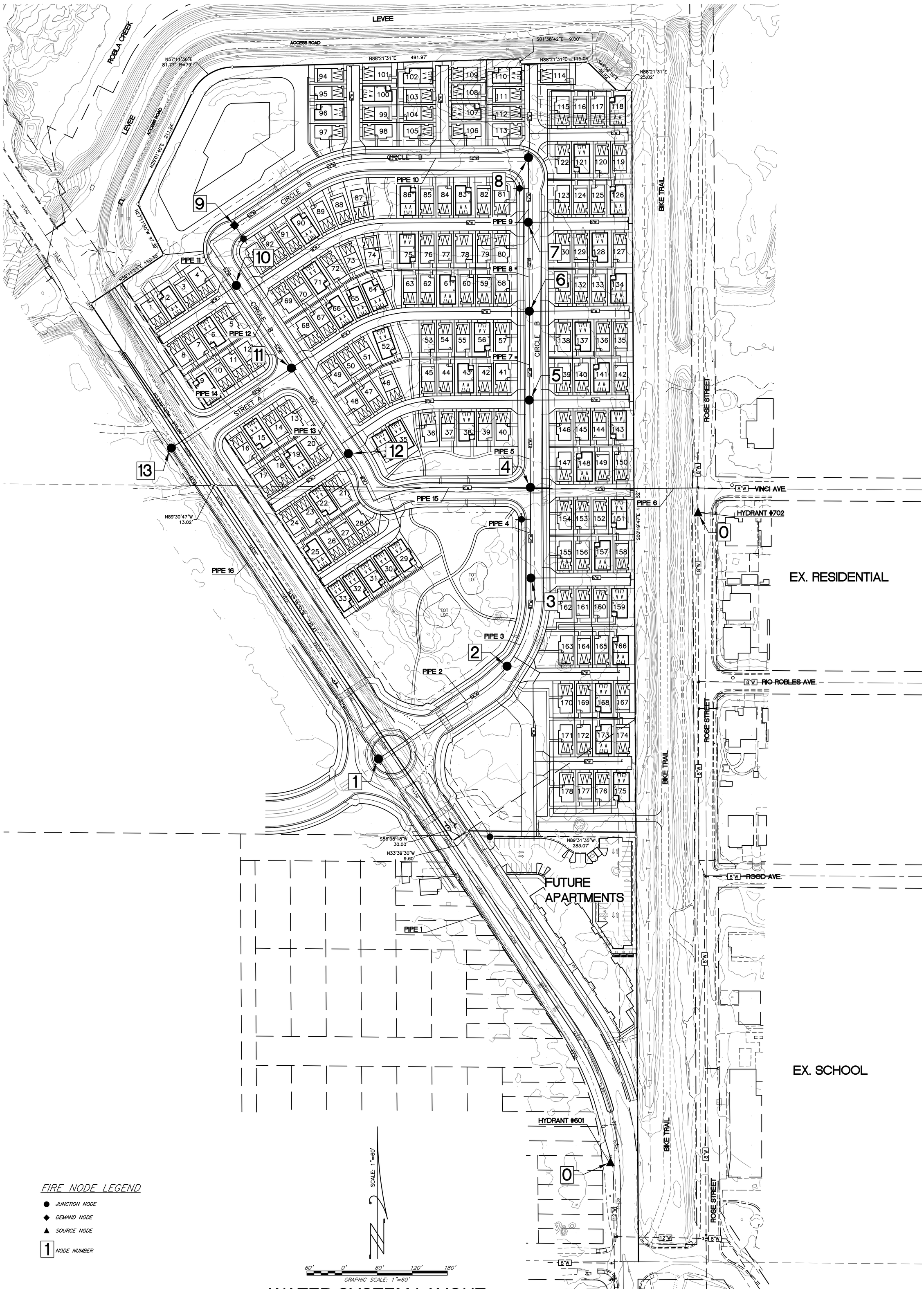
Table 5 – Peak Hour Demand Result Summary

VI. Findings

This model for the proposed water system extending into the project from Rio Linda Boulevard meets the Fire Flow demands and pressure requirements and the maximum pipe velocity. Therefore, the model is compliant to the City of Sacramento Standards.

APPENDIX A

Water System Layout



FIRE NODE LEGEND

- ● *JUNCTION NODE*
- ◆ *DEMAND NODE*
- ▲ *SOURCE NODE*
- 1 *NODE NUMBER*

BAKER WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336~Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009

WATER SYSTEM LAYOUT
ROBLA ESTATES

CITY OF SACRAMENTO,
SACRAMENTO COUNTY, CALIFORNIA
MARCH, 2021

S:\BWEG Jobs\2020 Jobs\20-02-009 Riverbend-5330 Rio Linda Blvd\Engineering\Water Study\200200 9-POST-PROJECT-WATER-SYSTEM.DWG, Layout1, 3/12/2021 7:50:14 AM, Matt Nason

APPENDIX B

Average Residential Flow Model for a demand of 0.24 gpm per lot

Michael F. Williams L.S.4732
Michael T. Robertson R.C.E.39875

Kent H. Baker R.C.E.26487
Lisa Barber Mattos R.C.E.44852

BAKER-WILLIAMS
ENGINEERING GROUP

6020 Rutland Drive, Suite #19
Carmichael, Ca., 95608
Telephone (916) 331-4336

March 12, 2021

Number of pipes: 16
Number of junction nodes: 13

Flow unit of measure: GPM
File name: 20009

Summary of Input Data

Pipe Data:

Pipe	Node #1	Node #2	Dia (in)	Length (ft)	H-W Coeff	Minor Fact	Pump Type	FGN Grade
1	0	1	12.0	794.0	130.0	0.0	-	113.60
2	1	2	12.0	272.0	130.0	0.0	-	-
3	2	3	12.0	160.0	130.0	0.0	-	-
4	3	4	12.0	155.0	130.0	0.0	-	-
5	4	5	12.0	149.0	130.0	0.0	-	-
6	0	4	12.0	328.0	130.0	0.0	-	109.60
7	5	6	12.0	152.0	130.0	0.0	-	-
8	6	7	12.0	152.0	130.0	0.0	-	-
9	7	8	12.0	111.0	130.0	0.0	-	-
10	8	9	12.0	533.0	130.0	0.0	-	-
11	9	10	12.0	139.0	130.0	0.0	-	-
12	10	11	12.0	170.0	130.0	0.0	-	-
13	11	12	8.0	176.0	130.0	0.0	-	-
14	11	13	12.0	246.0	130.0	0.0	-	-
15	12	4	8.0	364.0	130.0	0.0	-	-
16	13	1	12.0	638.0	130.0	0.0	-	-

Junction Node Data:

Node #	Demand (GPM)	Elev (ft)	Connecting Pipes
1	3.19	35.00	1, 2, 16
2	3.86	33.00	2, 3
3	1.93	33.50	3, 4
4	1.93	34.00	4, 5, 6, 15
5	4.31	34.20	5, 7
6	4.58	35.00	7, 8
7	4.80	36.50	8, 9
8	6.96	36.00	9, 10

9	0.00	35.00	10, 11
10	5.03	35.50	11, 12
11	4.08	33.50	12, 13, 14
12	5.30	33.50	13, 15
13	0.00	37.00	14, 16

Simulation Results

Number of trials: 10
Convergence : 0.0006

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	0	1	12.0	794.0	1093.81	3.10	2.38	0.00	-	2.99
2	1	2	12.0	272.0	676.04	1.92	0.33	0.00	-	1.23
3	2	3	12.0	160.0	672.18	1.91	0.19	0.00	-	1.22
4	3	4	12.0	155.0	670.25	1.90	0.19	0.00	-	1.21
5	5	4	12.0	149.0	236.03	0.67	0.03	0.00	-	0.17
6	4	0	12.0	328.0	1047.84	2.97	0.91	0.00	-	2.77
7	6	5	12.0	152.0	240.33	0.68	0.03	0.00	-	0.18
8	7	6	12.0	152.0	244.91	0.69	0.03	0.00	-	0.19
9	8	7	12.0	111.0	249.72	0.71	0.02	0.00	-	0.19
10	9	8	12.0	533.0	256.67	0.73	0.11	0.00	-	0.20
11	10	9	12.0	139.0	256.67	0.73	0.03	0.00	-	0.20
12	11	10	12.0	170.0	261.70	0.74	0.04	0.00	-	0.21
13	11	12	8.0	176.0	148.80	0.95	0.09	0.00	-	0.54
14	13	11	12.0	246.0	414.58	1.18	0.12	0.00	-	0.50
15	12	4	8.0	364.0	143.50	0.92	0.18	0.00	-	0.50
16	1	13	12.0	638.0	414.58	1.18	0.32	0.00	-	0.50

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
1	1093.80+
6	1047.85-

Net system demand: 45.92 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
1	3.10	1	2.99	2	33.75
6	2.97	6	2.77	11	33.49
2	1.92	2	1.23	3	33.45
8	0.69	8	0.19	8	32.33
7	0.68	7	0.18	7	32.11
5	0.67	5	0.17	13	32.03

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

APPENDIX C

Max Day Demand with
Fire Flow Demand
@ Node 9

Michael F. Williams L.S.4732
Michael T. Robertson R.C.E.39875

Kent H. Baker R.C.E.26487
Lisa Barber Mattos R.C.E.44852

BAKER-WILLIAMS
ENGINEERING GROUP

6020 Rutland Drive, Suite #19
Carmichael, Ca., 95608
Telephone (916) 331-4336

March 12, 2021

Number of pipes: 16
Number of junction nodes: 13

Flow unit of measure: GPM
File name: 20009

Summary of Input Data

Pipe Data:

Pipe	Node #1	Node #2	Dia (in)	Length (ft)	H-W Coeff	Minor Fact	Pump Type	FGN Grade
1	0	1	12.0	794.0	130.0	0.0	-	113.60
2	1	2	12.0	272.0	130.0	0.0	-	-
3	2	3	12.0	160.0	130.0	0.0	-	-
4	3	4	12.0	155.0	130.0	0.0	-	-
5	4	5	12.0	149.0	130.0	0.0	-	-
6	0	4	12.0	328.0	130.0	0.0	-	109.60
7	5	6	12.0	152.0	130.0	0.0	-	-
8	6	7	12.0	152.0	130.0	0.0	-	-
9	7	8	12.0	111.0	130.0	0.0	-	-
10	8	9	12.0	533.0	130.0	0.0	-	-
11	9	10	12.0	139.0	130.0	0.0	-	-
12	10	11	12.0	170.0	130.0	0.0	-	-
13	11	12	8.0	176.0	130.0	0.0	-	-
14	11	13	12.0	246.0	130.0	0.0	-	-
15	12	4	8.0	364.0	130.0	0.0	-	-
16	13	1	12.0	638.0	130.0	0.0	-	-

Junction Node Data:

Node #	Demand (GPM)	Elev (ft)	Connecting Pipes
1	5.21	35.00	1, 2, 16
2	7.68	33.00	2, 3
3	3.86	33.50	3, 4
4	3.86	34.00	4, 5, 6, 15
5	8.62	34.20	5, 7
6	9.11	35.00	7, 8
7	9.61	36.50	8, 9
8	13.91	36.00	9, 10

9	1500.00	35.00	10, 11
10	10.10	35.50	11, 12
11	8.17	33.50	12, 13, 14
12	10.55	33.50	13, 15
13	0.00	37.00	14, 16

Simulation Results

Number of trials: 5
Convergence : 0.0002

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Minor	Pump Head	Hd Loss /1000 ft
1	0	1	12.0	794.0	1336.39	3.79	3.44	0.00	-	4.34
2	1	2	12.0	272.0	628.81	1.78	0.29	0.00	-	1.07
3	2	3	12.0	160.0	621.14	1.76	0.17	0.00	-	1.05
4	3	4	12.0	155.0	617.28	1.75	0.16	0.00	-	1.04
5	4	5	12.0	149.0	655.08	1.86	0.17	0.00	-	1.16
6	0	4	12.0	328.0	254.28	0.72	0.07	0.00	-	0.20
7	5	6	12.0	152.0	646.46	1.83	0.17	0.00	-	1.13
8	6	7	12.0	152.0	637.35	1.81	0.17	0.00	-	1.10
9	7	8	12.0	111.0	627.75	1.78	0.12	0.00	-	1.07
10	8	9	12.0	533.0	613.83	1.74	0.55	0.00	-	1.03
11	10	9	12.0	139.0	886.17	2.51	0.28	0.00	-	2.03
12	11	10	12.0	170.0	896.27	2.54	0.35	0.00	-	2.07
13	12	11	8.0	176.0	202.06	1.29	0.17	0.00	-	0.95
14	13	11	12.0	246.0	702.37	1.99	0.32	0.00	-	1.32
15	4	12	8.0	364.0	212.61	1.36	0.38	0.00	-	1.04
16	1	13	12.0	638.0	702.37	1.99	0.84	0.00	-	1.32

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
1	1336.39+
6	254.27+

Net system demand: 1590.64 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
1	3.79	1	4.34	2	33.31
12	2.54	12	2.07	3	33.02
11	2.51	11	2.03	12	32.78
15	1.36	10	1.03	8	31.59
13	1.29	13	0.95	7	31.43
6	0.72	6	0.20	13	31.34

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

APPENDIX D

Peak Hour Residential Flow Model
for a demand of 0.62 gpm per lot

Michael F. Williams L.S.4732
Michael T. Robertson R.C.E.39875

Kent H. Baker R.C.E.26487
Lisa Barber Mattos R.C.E.44852

BAKER-WILLIAMS
ENGINEERING GROUP

6020 Rutland Drive, Suite #19
Carmichael, Ca., 95608
Telephone (916) 331-4336

March 12, 2021

Number of pipes: 16
Number of junction nodes: 13

Flow unit of measure: GPM
File name: 20009

Summary of Input Data

Pipe Data:

Pipe	Node #1	Node #2	Dia (in)	Length (ft)	H-W Coeff	Minor Fact	Pump Type	FGN Grade
1	0	1	12.0	794.0	130.0	0.0	-	113.60
2	1	2	12.0	272.0	130.0	0.0	-	-
3	2	3	12.0	160.0	130.0	0.0	-	-
4	3	4	12.0	155.0	130.0	0.0	-	-
5	4	5	12.0	149.0	130.0	0.0	-	-
6	0	4	12.0	328.0	130.0	0.0	-	109.60
7	5	6	12.0	152.0	130.0	0.0	-	-
8	6	7	12.0	152.0	130.0	0.0	-	-
9	7	8	12.0	111.0	130.0	0.0	-	-
10	8	9	12.0	533.0	130.0	0.0	-	-
11	9	10	12.0	139.0	130.0	0.0	-	-
12	10	11	12.0	170.0	130.0	0.0	-	-
13	11	12	8.0	176.0	130.0	0.0	-	-
14	11	13	12.0	246.0	130.0	0.0	-	-
15	12	4	8.0	364.0	130.0	0.0	-	-
16	13	1	12.0	638.0	130.0	0.0	-	-

Junction Node Data:

Node #	Demand (GPM)	Elev (ft)	Connecting Pipes
1	8.30	35.00	1, 2, 16
2	9.92	33.00	2, 3
3	4.98	33.50	3, 4
4	4.98	34.00	4, 5, 6, 15
5	11.18	34.20	5, 7
6	11.76	35.00	7, 8
7	12.39	36.50	8, 9
8	18.00	36.00	9, 10

9	0.00	35.00	10, 11
10	13.02	35.50	11, 12
11	10.55	33.50	12, 13, 14
12	13.65	33.50	13, 15
13	0.00	37.00	14, 16

Simulation Results

Number of trials: 10
Convergence : 0.0005

Pipe	Nodes (Q--->)		Dia (in)	Length (ft)	Flow (GPM)	Vel (fps)	Losses (ft) Head	Losses (ft) Minor	Pump Head	Hd Loss /1000 ft
1	0	1	12.0	794.0	1114.02	3.16	2.46	0.00	-	3.10
2	1	2	12.0	272.0	680.29	1.93	0.34	0.00	-	1.24
3	2	3	12.0	160.0	670.37	1.90	0.19	0.00	-	1.21
4	3	4	12.0	155.0	665.39	1.89	0.18	0.00	-	1.19
5	5	4	12.0	149.0	200.29	0.57	0.02	0.00	-	0.13
6	4	0	12.0	328.0	995.30	2.82	0.82	0.00	-	2.51
7	6	5	12.0	152.0	211.47	0.60	0.02	0.00	-	0.14
8	7	6	12.0	152.0	223.23	0.63	0.02	0.00	-	0.16
9	8	7	12.0	111.0	235.62	0.67	0.02	0.00	-	0.17
10	9	8	12.0	533.0	253.62	0.72	0.11	0.00	-	0.20
11	10	9	12.0	139.0	253.62	0.72	0.03	0.00	-	0.20
12	11	10	12.0	170.0	266.63	0.76	0.04	0.00	-	0.22
13	11	12	8.0	176.0	148.24	0.95	0.09	0.00	-	0.53
14	13	11	12.0	246.0	425.43	1.21	0.13	0.00	-	0.52
15	12	4	8.0	364.0	134.60	0.86	0.16	0.00	-	0.45
16	1	13	12.0	638.0	425.43	1.21	0.33	0.00	-	0.52

Summary of inflows (+) and outflows (-):

Pipe #	Flow (GPM)
1	1114.02+
6	995.30-

Net system demand: 118.68 GPM

Maximum-Minimum Summary:

Pipe #	Vel (fps)	Pipe #	HL/1000 ft	Node #	Press (psi)
1	3.16	1	3.10	2	33.71
6	2.82	6	2.51	11	33.44
2	1.93	2	1.24	3	33.41
8	0.63	8	0.16	8	32.29
7	0.60	7	0.14	7	32.06
5	0.57	5	0.13	13	31.98

NOTE: 'HL/1000 ft' does NOT include Minor Losses; and Pipes with zero flow are not included under Minimum 'Vel (fps)'.

APPENDIX E

City Water Supply Test for Project

CITY OF SACRAMENTO
WATER STUDY DESIGN MANUAL

This manual is intended to provide developers information needed to complete a water study for a new development project, including the form(s) necessary for a complete submittal.

January 2018

Every project, regardless of size, must fill out and submit the "SB 610/SB 221 Water Supply Assessment and Certification Form" (see Attachment 1). This form will confirm or deny the availability of water supply, per the latest Urban Water Management Plan, before the project can proceed.

Once water supply has been validated for the project, then a water study shall be completed for the project design. This study must be stamped by a licensed engineer and submitted to the Department of Utilities for review. The submittal shall include an electronic copy of every submittal, and if requested, electronic copies of the model/calculation tool.

The study must be based on a water system design that meets the City design standards for a public water system, including but not limited, to properly sizing pipe to meet both water quality and fire flow needs for the project, looping systems for redundancy and improved water supply, and hydrant placement as it relates to the surrounding area as well as the project.

Water studies shall follow the "Water Distribution System Criteria" (see Attachment 2) and incorporate the following information:

1) **Study Purpose and Objectives**
    a) Include description of the development including any proposed phasing of the improvements
        i) Geographic location of the project and the surrounding area, including elevations
        ii) Land use type of the project and the surrounding area (identify if different from the current General Plan)
        iii) Number of services being proposed
        iv) Existing water infrastructure as well as proposed new infrastructure, including pipe size, age, and material
        v) Descriptions of any non-standard proposed designs and reasons for not meeting standards
2) **Study Area**
    a) Location Map
    b) Modeled Water Distribution Layout Map – Include pipe size, demand junctions (include elevations based on project area survey results), tie-in locations, and any necessary system modifications
3) **Demands and Peaking Factors**
    a) Land Use Designation (Units, Acres, and Demand Factor – include source)
    b) Flows to be assessed (concurrently)
        i) Domestic
        ii) Irrigation
        iii) Hydrant Flow
        iv) Fire Sprinkler Loads (*Fire sprinkler loads may be waived if authorization is provided by the current City of Sacramento Fire Marshall and the report includes details of the correspondence)
    c) Demand Factor (by Land Use Designation if more than one)
        i) Average Day Demand (ADD)

ii) Maximum Day Demand (MDD) - 2.0 x Average Day
iii) Peak Hour Demand (PHD) - 2.6 x Average Day
iv) Assumed System Losses

4) **Design Criteria**
   a) City of Sacramento Design Criteria – Include Source
      i) Minimum velocity during Average Day Demand
      ii) Minimum residual pressure during Peak Hour Demand
      iii) Maximum velocity during Peak Hour Demand
      iv) Minimum residual pressure during Maximum Day Demand plus fire flow
      v) Maximum velocity during Maximum Day Demand plus fire flow
      vi) Maximum headloss per 1,000-LF
      vii) Minimum velocity during Average Day Demand
      viii) Hazen Williams "C"
      ix) Elevations at demand nodes (should reflect surveyed elevations for project)
   b) Fire Flow Requirements – As Required by the Fire Department (shall be no less than 1,000-gpm with 20-psi residual)
      i) Flow (gpm)
      ii) Residual Pressure (psi)
      iii) Duration (Hours)
5) **Hydraulic Analysis Summary**
   a) Model Description - Include software information (if applicable) and source of data
   b) Existing Boundary Conditions, including results from field hydrant testing
   c) Model Scenarios and Results
      i) Include Minimum/Maximum Pressure and Maximum Velocity for Average Day Demand, Maximum Day Demand, Maximum Day Demand plus Fire Flow, and Peak Hour Demand for each scenario (include back-up by junction and pipe segment)
      ii) Phased projects shall include intermediate and cumulative results
6) **Conclusions**

At the discretion of the City Engineer, additional information may be required for the water study. Each project is different and may require additional information dependent on the location, size of development and land use being proposed for the project.

Press to clear form

City of Sacramento
SB 610/SB 221 Water Supply Assessment and Certification Form

This form may be used to complete water supply assessments for projects located in an area covered by the City's most recent Urban Water Management Plan.

Note: Please do not use this form if the projected water demand for your project area was not included in the City's latest Urban Water Management Plan. To review the City's Urban Water Management Plan, please visit: http://www.cityofsacramento.org/Utilities/Resources/Reports

Project: Robla Estates

Date: February 2, 2021

Project Applicant (Name of Company): Baker-Williams Engineering Group

Applicant Contact (Name of Individual): Michael Robertson

Phone Number: 916-331-4336 x 114

E-mail: miker@bwengineers.com

Address: 6020 Rutland Dr., Suite #19, Carmichael, CA 95608

Project Applicant to fill in the following:

1. Does the project include:

Type of Development	Yes	No
A proposed residential development of 500 or more dwelling units		✔
A shopping Center employing more than 1,000 persons or having more than 500,000 square feet?		✔
A Commercial Office building employing more than 1,000 persons or having more than 250,000 square feet?		✔
A proposed hotel or motel, or both, having more than 500 rooms		✔
A proposed industrial, manufacturing, or processing plant or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area		✔
A mixed use project that includes one or more of the projects specified above		✔
A project that would demand an amount of water equivalent to, or greater than, the water required by a 500 dwelling unit project		✔

If the answer is no to all of the above, a water supply assessment is not required for the project.

2. Is the projected water demand for the project location included in the City's 2015 Urban Water Management Plan, adopted June 21, 2016?

Yes: ✔ No: ☐

If the answer is no, you cannot use this form. Please refer to the requirements of SB 610 for preparing a water supply assessment.

3. Please fill in the project demands below:

Type of Development	Land Use Category	Demand Factor		Proposed Development			Current Zoning		
		Residential Water Use Factor, afy/dwelling unit	Non-Residential Water Use Factor, afy/employee	Number Dwelling Units	Number Employees	Total Demand	Number Dwelling Units	Number Employees	Total Demand
Residential - Low	Rural Residential (RR)	.61	.09						
	Suburban Neighborhood Low Density (SNLD)								
	Traditional Neighborhood Low Density (TLDR)								
Residential - Medium	Suburban Neighborhood Medium Density (SMDR)	.39	.09	178		69.42			
	Urban Neighborhood Low Density (ULDR)								
Residential - High	Suburban Neighborhood High Density (SHDR)	.12	.04						
	Traditional Neighborhood Medium Density (TMDR)								
	Urban Neighborhood Medium Density (UMDR)								
	Traditional Neighborhood High Density (THDR)			43		5.16			
Mixed Use	Employment Center Mid Rise (ECMR)	.19	.09						
	Suburban Center (SCnt)								
	Suburban Corridor (Scor)								
	Traditional Center (TCnt)								

Mixed Use - Higher Density	Urban Center High (UCntHigh)	.15	.04						
	Urban Center Low (UcntLow)								
	Urban Corridor High (UCorHigh)								
	Urban Corridor Low (UCorLow)								
Central Business District	Central Business District (CBD)	.15	.02						
	Urban Neighborhood High Density (UHDR)								
Commercial	Regional Commercial (RC)	.15	.09						
	Employment Center Low Rise (ECLR)								
Industrial	Industrial (IND)	NA	.14						
Public	Public/Quasi-Public (PUB)	.37	.17						
Park	Parks and Recreation (PRK)	.37	.17						
Open Space	Open Space (OS)	0	0						
Other									
Other									
Other									
Total Demand (AFY)						74.58			

4. Required Elements of Water Supply Assessment (Water Code § 10910)

A. Water supply entitlements, water rights or water service contracts (Water Code § 10910(d)):

The City's water supply entitlements, water rights and water service contract are identified and discussed in the Urban Water Management Plan, Chapters 3, 6 and 7.

All infrastructure necessary to deliver a water supply to the project is in place, excepting any distribution facilities required to be constructed and financed by the project applicant: Yes: ✔ No: ☐

B. Identification of other sources of water supply if no water has been received under City's existing entitlements, water rights or water service contracts (Water Code § 10910(e)):

Not applicable.

C. Information and analysis pertaining to groundwater supply (Water Code § 10910(f)):

Addressed by Urban Water Management Plan, Chapters 3, 6 and 7.

Verification of Water Supply
(for residential development of more than 500 dwelling units)

Based on the City's most recent Urban Water Management Plan, are there sufficient water supplies for the project during normal, single dry and multiple dry years over a 20 year period?

Yes:_____ No:_____

By:_____

Title:_____

Date:_____

This box to be filled in by the City

Distribution:

Applicant
Development Services Department (Org: 4913) – Assigned Planner:_____
Utilities Department (Org: 3334) - Development Review (Tony Bertrand)
Utilities Department (Org: 3332) - Capital Improvements (Brett Ewart)

City of Sacramento

Water Distribution System Criteria

Summary of Recommended Potable Water System Performance and Operational Criteria

Component	Criteria		Comments
Fire Flow Requirements (flow [gpm] @ duration [hours])			
Single Family Residential	1,500 gpm @ 2 hrs		Existing Development will be evaluated on a case-by-case basis because of the historical varying standard
Multi Family Residential	2,500 gpm @ 2 hrs		
Commercial	3,500 gpm @ 4 hrs (w/ approved automatic sprinkler system)		
Industrial	4,500 gpm @ 4 hrs (w/ approved automatic sprinkler system)		
Institutional	4,500 gpm @ 4 hrs (w/ approved automatic sprinkler system)		
Water Transmission Line Sizing			
Diameter	>= 18-inches		Locate new transmision pipelines within designated utility corridors wherever possible.
Average Day Demand Condition			Criteria based on requirements for new development, existing transmission mains will be evaluated on case-by-case basis. Evaluation will include age, material type, velocity, head loss, and pressure.
Minimum Pressure [psi]	30 psi		
Maximum Pressure [psi]	80 psi		
Maximum Head loss [ft/kft]	3 ft/kft		
Maximum Velocity [ft/sec]	3 ft/sec		
Minimum Velocity [ft/sec]	0.10 ft/sec		
Maximum Day Demand Condition			
Maximum Pressure [psi]	30 psi		
Maximum Head loss [ft/kft]	3 ft/kft		
Maximum Velocity [ft/sec]	5 ft/sec		
Peak Hour Demand Condition			
Minimum Pressure [psi]	30 psi		
Maximum Head loss [ft/kft]	3 ft/kft		
Maximum Velocity [ft/sec]	5 ft/sec		
Hazen Williams "C" Factor	130		For consistency in hydraulic modeling.
Pipeline Material	CCP (Concrete Cylinder Pipe), Ductile Iron, or Welded Steel		
Water Distribution Line Sizing			
Diameter	< 18-inches		Must verify pipeline size with maximum day plus fire flow analysis. Locate new distribution pipelines within designated utility corridors wherever possible
Average Day Demand Condition			
Minimum Pressure [psi]	30 psi		Criteria based on requirements for new development, existing distribution mains will be evaluated on case-by-case basis. Evaluation will include age, material type, velocity, head loss, and pressure.
Maximum Pressure [psi]	80 psi		
Maximum Head loss [ft/kft]	7 ft/kft		
Maximum Velocity [ft/sec]	5 ft/sec		
Minimum Velocity [ft/sec]	0.10 ft/sec		
Maximum Day with Fire Flow Demand Condition			
Minimum Pressure [psi] (at fire node)	20 psi		
Maximum Head loss [ft/kft]	10 ft/kft		
Maximum Velocity [ft/sec]	10 ft/sec		
Peak Hour Demand Condition			
Minimum Pressure [psi]	30 psi		
Maximum Head loss [ft/kft]	7 ft/kft		
Maximum Velocity [ft/sec]	7 ft/sec		
Minimum Pipeline Diameter			
General	8-inches		6-inch may apply where minimum velocities aren't met
Industrial	12-inches		
Distribution to cul-de-sac / dead-end street	6-inches		4-inch may apply where minimum velocities aren't met and the dead end is no longer than 250-feet. 6-inch dead end runs shall be no longer than 500-feet.
Distribution to fire hydrants	8-inches		
Hazen Williams "C" Factor	130		For consistency in hydraulic modeling.
Pipeline Material	Ductile Iron or C900 PVC		
Maximum Water Service Pressure [psi]	80 psi		Install PRV if service pressure is greater than 80 psi.
Gross Unit Water Use Factors for Retail Distribution System	Composite Residential Use Factor[(a)] [afy/dwelling unit]	Composite Non-Residential Water Use Factor[(b)] [afy/employee]	(a) Use factor includes 10% for unaccounted-for water. Public and Park uses show small increases in residential dwelling units because the spatial analysis captures small residential areas adjacent to these land uses. Average of residential category used to estimate this small residential use. Significant irrigation requirements for parks are assumed to be provided from wells not connected to the potable water system. Other use factors, such as residential categories, include neighborhood park water use, incorporate park irrigation use in the non-residential category. (b) Use factor includes 10% for unaccounted for water. Residential Low, Medium and High have small non-residential water use sample size. Therefore, Mixed Use Non-Residential used for Residential Low and Medium. Mixed Use - Higher Density used for Residential High.
Residential Low	0.61	0.09	
Residential Medium	0.39	0.09	
Residential High	0.12	0.04	
Mixed Use	0.19	0.09	
Mixed Use (Higher Density)	0.15	0.04	
Central Business Density	0.15	0.02	
Commercial/Office	0.15	0.09	
Industrial	--	0.14	
Public	0.37	0.17	
Park	0.37	0.17	
Gross Unit Water Use Factors for Study Areas	Gross Water Use Factor [afa/acre]		Use factor includes 10% for unaccounted-for water and 15% to account for rights-of-way and streets (net water use x 1.1/1.5 = gross water use).
Residential Low	3.6		
Residential Medium	3.8		
Mixed Use	2.0		
Commercial/Office	1.5		
Industrial	0.9		
Park	3.0		

APPENDIX F

City Water Study Design Manual

WATER SUPPLY TEST - DEPARTMENT OF UTILITIES

City of Sacramento	WORK ORDER #:	521195	WST NUMBER: 2008065
Community Development Dept.	ANALYSIS FEE:	$392.00	DATE PAID: 5.15.20
300 Richards Blvd., 3rd Floor	FIELD TEST FEE:	$902.00	DATE PAID: 5.15.20
Sacramento, CA 95811	HYDRAULIC BOUNDARY CONDITION		DATE PAID:
CONTACT: Mike Robertson	FEE: $481.00; optional see item (3) below.		TEST NUMBER: 1 of 1
COMPANY: Baker Williams	PHONE NUMBER:	916.331.4336 ext 11	EMAIL: miker@bwengineers.com
ADDRESS: 6020 Rutland Drive sui	ADDRESS OF TEST:	5330 Rio Linda Blvd	
carmichael ca 95608	ASSESSOR'S PARCEL NUMBER:	226-0062-004,008,009,011, 226-0102-001	

The undersigned agrees to the following items and conditions:

(1) The street address and/or parcel number shown above is correct

(2) Water supply data is developed from several sources of information which may include water supply test data, computer models, and pressure recording stations. The water supply data given is to be used for design purposes.

(3) Based on hydrant locations, test results may not provide accurate flow information at the point of connection, for a fee the City can provide the hydraulic analysis necessary to transfer the results to a single point of connection.

(4) Although the water supply data reported herein is believed to be accurate, the City makes no warranty, guaranty, certification or other representation of any kind that such data is accurate or correct, or that the pressures and/or flow rates reported herein can or will be maintained. The undersigned agrees that the City, its officers and employees shall not be liable for any damages of any kind resulting from the use of or reliance upon the water supply data reported herein by the undersigned or by any third party.

(5) When more than one water supply test has been performed, the decision is left to the Fire Plan Checker as to which water supply test is to be used.

(6) If the undersigned desires to witness the water supply test performed by the City, please check the box below:

☐ *I want to witness this water supply test, which will be scheduled at the convenience of the Department of Utilities.*

(7) If the undersigned elects to hire a licensed engineer, at the undersigned's sole expense, to witness and certify the water supply test performed by the City, please check the box below:

☐ *At my expense, I will arrange for a licensed engineer to witness and certify this water supply test, which will be scheduled at the convenience of the Department of Utilities.*

PRINT NAME: Mike Robertson SIGNATURE: signed Hc

DATE: 5.14.20

DATE OF TEST:	7/29/2020	TIME OF TEST:	6:30 AM
WTR. MAIN SIZE:	12"	TEST CONDUCTED BY:	Sal Miano

	Hydrant Number	Map Page	Static Pres. (PSI)	Residual Pres. (PSI)	Pitot Pres. (PSI)	Outlet Dia. (Inches)	Coefficient C_1	Coefficient C_2	Calc. Flow @ Pres. (GPM)	Flow @ 20 PSI (G.P.M.)
Residual	902	N18	41	30						
Flowed	603	N18			17	4.5	0.90	0.83	1860	1950
Flowed	702	M19			7	4.5	0.90	0.83	1194	1251
Flowed										
Flowed										

* THE WATER SUPPLY TEST DATA IS NOT TO BE USED FOR THE DESIGN OF DOMESTIC WATER SYSTEMS.

* (STATIC PRES. - RESIDUAL PRES.) / (STATIC PRES. - 20 PSI) MUST NOT BE LESS THAN 25%. THEREFORE, THESE RESULTS ARE ONLY VALID FOR RESIDUAL PRESSURES LESS THAN 36 PSI

WATER SUPPLY DATA SUMMARY

	Design (1)
Static Pressure	32 PSI
Residual Pressure	21 PSI
Total Flow @ Residual	3100 G.P.M.
Total Flow @ 20 PSI	3200 G.P.M.

(1) The Design Water Supply Data reflects fluctuations and future demands on the water distribution system. It is to be used for design purposes.

7/2018

APPENDIX I
PRELIMINARY BASIN SIZING MEMORANDUM

2020 Research Park Drive
Suite 100
Davis CA 95618

530.756.5905 phone
530.756.5991 fax
westyost.com

TECHNICAL MEMORANDUM

DATE: March 31, 2022

Project No.: 937-60-20-01
SENT VIA: EMAIL

TO: Michael Robertson, Baker-Williams Engineering Group

FROM: Michele Miller, PE, RCE #88437

REVIEWED BY: Mark Kubik, PE, RCE #50963

SUBJECT: Robla Estates Preliminary Basin Sizing

REGISTERED PROFESSIONAL ENGINEER
MICHELE MARIE MILLER
No. C88437
Exp. 3-31-22
CIVIL
STATE OF CALIFORNIA

West Yost has conducted a preliminary study to size the proposed detention basin and pump station at Robla Estates which are intended to provide flood control and stormwater quality treatment for the 177-unit development. This draft Technical Memorandum (TM) summarizes the hydrologic and hydraulic (H&H) model creation, study assumptions, and preliminary sizing of the proposed detention basin, and the associated pump station. The sections of this TM include:

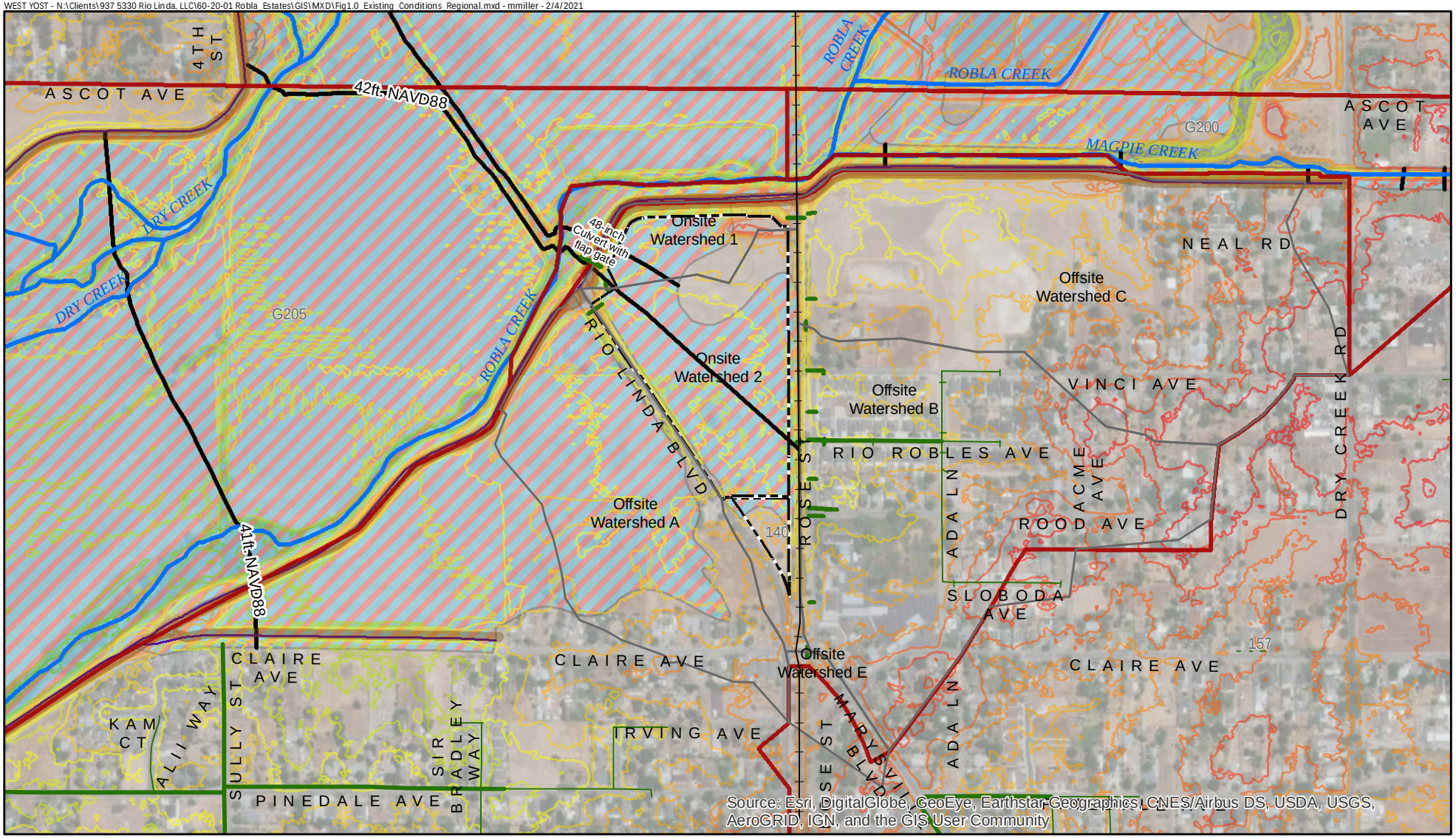
- Background Information
- Site Visit
- Hydrologic and Hydraulic Model Creation
- Study Assumptions
- Existing Watershed Characteristics
- Proposed Watershed Characteristics
- Preliminary Basin and Pump Station Sizing Process
- Detention Basin Sizing
- Flood Control Benefit
- Draft Conditions of Approval
- Low Impact Development and Water Quality
- Hydromodification and Outlet Configuration
- Preliminary Pipe Sizing

BACKGROUND INFORMATION

A residential development project is proposed at 5330 and 5240 Rio Linda Boulevard in the City of Sacramento (City). The project is located east of Rio Linda Boulevard, west of the Bike Trail, and south of Robla Creek as shown on Figure 1. A federally certified levee separates Robla Estate from Robla Creek. Robla Estates is within an existing Federal Emergency Management Agency (FEMA) floodplain at the

site. Currently, several offsite watersheds flow into the Robla Estate site and are drained to Robla Creek via an existing 48-inch culvert.

WEST YOST - N:\Clients\937 5330 Rio Linda, LLC\60-20-01 Robla Estates\GIS\MXD\Fig1.0_Existing_Conditions_Regional.mxd - mmiller - 2/4/2021



Ground Elevation ft. NAVD88

- 26
- 28
- 30
- 32
- 34
- 36
- 38
- 40
- 42
- 44
- 46
- 48
- 50

- Bike Trail
- Federal Levee
- FEMA Base Flood Elevation
- FEMA Flood Zone A
- FEMA Flood Zone AE
- City Drainage Basins
- Creeks
- Existing Storm Pipe
- Robla Estates Boundary
- Existing Watershed

N

0 250 500

Scale in Feet

WEST YOST

Figure 1

Regional Site Map
Stormwater Drainage

Robla Estates
5330 Rio Linda, LLC

SITE VISIT

A site visit was conducted on October 29, 2020 to document the culvert locations and existing offsite and onsite flow patterns. Flap gates were noted on all eastern pipe connections to Robla Estates. The flap gate on the northern pipe outfall is currently missing and will be replaced by the City. The following flow paths and infrastructure were observed on the site and listed by watershed:

- Offsite Watershed A drains northeast to a 30-inch reinforced concrete pipe (RCP) culvert where it enters the Robla Estates site and is discharged through a 48-inch RCP culvert under the levee to Robla Creek.
- Offsite Watershed B drains to the west through the City storm drain system and is discharged to the East Channel. The East Channel is relatively flat, with a slight slope north to a 48-inch RCP culvert where flow enters the Robla Estates Site. The 48-inch RCP culvert flows to the Northern Channel for discharge to Robla Creek through a 48-inch RCP culvert with flap gate. Flow can also exit the East Channel through a 36-inch RCP culvert with flap gate west of Rio Robles Avenue, which discharges to Onsite Watershed 2.
- Offsite Watershed C drains to the northwest and enters the Robla Estates site by a 48-inch RCP culvert under the Bike Trail.
- Offsite Watershed D was delineated west of Offsite Watershed A, but was found not to contribute to flows at Robla Estate. Offiste Watershed D is omitted from discussion and figures.
- Offsite Watershed E drains north to a 12-inch RCP culvert then flows north in the East Channel.
- Onsite Watershed 1 flows northwest to the Northern Channel where it is discharged through a 48-inch RCP culvert through the levee to Robla Creek.
- Onsite Watershed 2 flows northwest through a series of shallow depressions to a 48-inch RCPculvert through the levee and discharges to Robla Creek. This is the same 48-inch culvert as mentioned in Watershed 1

HYDROLOGIC AND HYDRAULIC MODEL CREATION

A local hydrologic and hydraulic model was created encompassing offsite and onsite watersheds that flow to the 48-inch culvert discharging to Robla Creek. The Horton infiltration and SWMM routing parameters were input to match the City of Sacramento Section 11 Stormwater Collection System Standards (Section 11). Impervious percentages and watershed widths reflect the guidance of the Section 11 standards. The XPSWMM software was used to simulate runoff, calculate water surface elevations, and size the proposed detention basin. Robla Estates was modeled for existing and proposed conditions to illustrate the increase in runoff associated with development. Offsite sheds were assumed to remain consistent in land use, with no additional development or increase in runoff.

STUDY ASSUMPTIONS

Through this effort, both the 100-year, 24-hour and the 100-year, 10-day design storms were simulated in accordance with the City standards for volume sizing of a detention basin. Using a long duration storm is particularly important, as there are no overland releases for Robla Estates. The 10-year, 24-hour storm was also simulated to show the detention basin functionality in a smaller storm and to demonstrate the

pipe system hydraulic grade line meets City criteria. The downstream boundary condition of 42-feet (ft) North American Vertical Datum 88 (NAVD88) is from the 100-year static tailwater from the SAFCA Robla Creek HEC-RAS model. The 10-year tailwater water surface elevation (WSEL) was determined from the Robla Creek FEMA Flood Profile to be elevation 38-ft NAVD88. Currently, the City and County have no available data sources to define a dynamic tailwater stagegraph. Because of this, the detention basin and pump station sizes in this study are considered conservatively large. It is possible that size these facilities could be reduced if a dynamic tailwater was used in the analysis.

The following roughness and depressions storages have been used throughout the existing and proposed conditions model:

- Impervious Area Depression Storage: 0.1-inch
- Impervious Area Manning's "n": 0.02
- Pervious Area Depression Storage: 0.35-inch
- Pervious Area Manning's "n": 0.25

EXISTING WATERSHED CHARACTERISTICS

City Basin #140 was delineated into five watersheds to account for flow patterns within Robla Estates. Flows from the five watersheds travel north, through the Robla Estates site to be discharged to Robla Creek. The existing land use is primarily low density residential and open space. A composite infiltration rate was created to reflect the blend of land uses, which correspond to City zoning data. Refer to Figure 2 and Table 1 for existing watershed land use and hydrologic characteristics.

Existing surface storage was added to the hydraulic model to account for stormwater that can pond up within a watershed without resulting overland spills. The existing storage areas follow contour lines below elevation 38 which corresponds to the elevation of Rio Linda Boulevard and the bike path. Figure 2 shows the delineation of the existing storage areas

Watershed widths were estimated by using the Equation 11-3 from the Section 11:

Equation 11-3 $W = A/L$

Where:

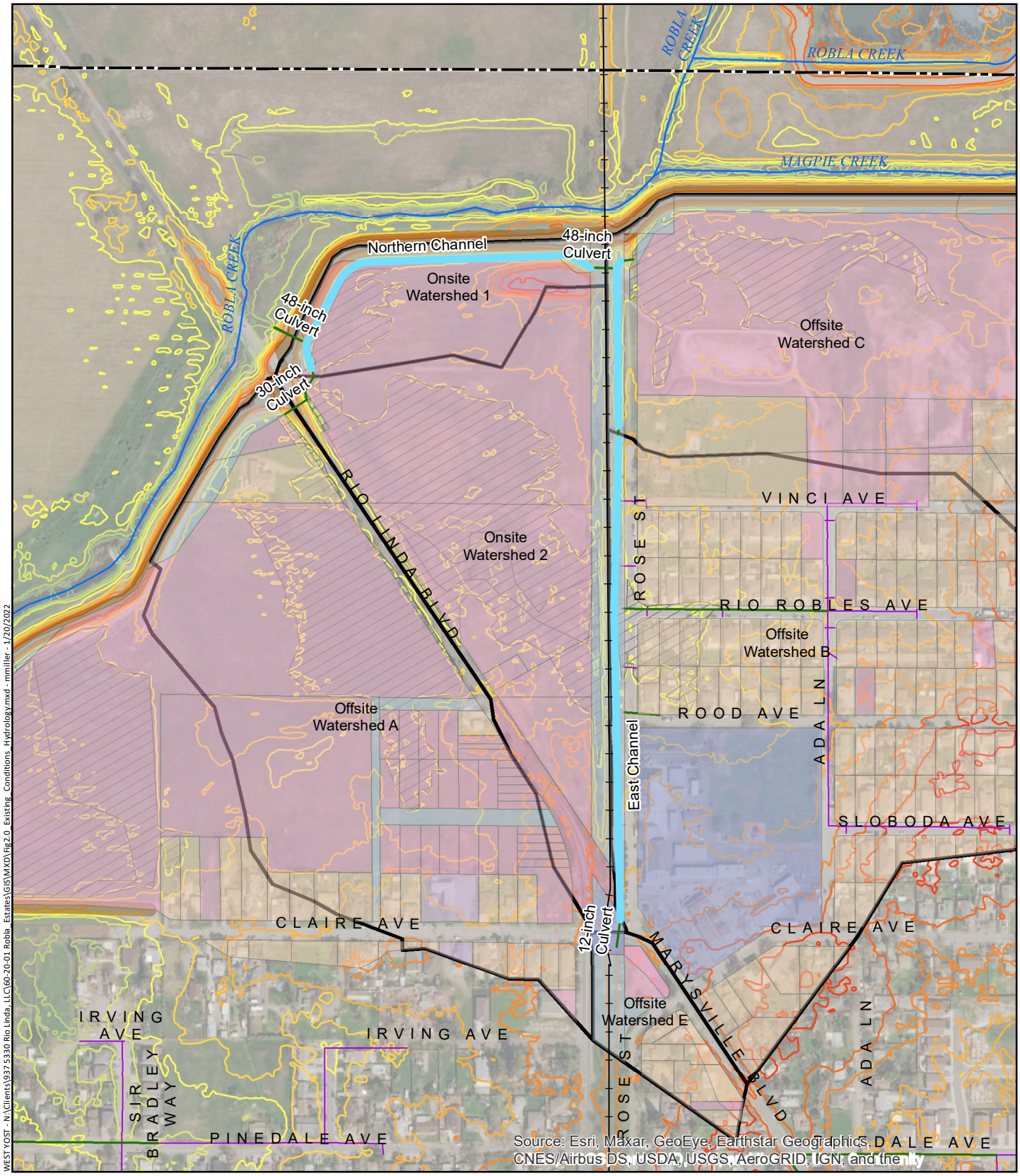
W = Shed Width (theoretical dimension)

L = Shed Length (feet) = overland (sheet) flow length = 150-feet for Residential, 200-feet for commercial

A = Shed Area (SF)

Table 1. Existing Watershed Characteristics

Subcatchment ID	Area, ac	Basin Length, ft	Basin Width, ft	Basin Slope, ft/ft	Composite Watershed Impervious Percent	NRCS Soil Type	10-Year, 24-Hour Peak Flow Rate, cfs	10-Year, 24-Hour Volume, ac-ft	100-Year, 24-Hour Peak Flow Rate, cfs	100-Year, 24-Hour Volume, ac-ft	100-Year, 10-Day Peak Flow Rate, cfs	100-Year, 10-Day Volume, ac-ft
Offsite Watersheds												
Offsite Watershed A	29.6	588.8	2,189.7	0.004	14.0	Type D	8.36	2.11	16.54	4.65	8.90	6.76
Offsite Watershed B	50.8	1,066.4	2,075.1	0.006	46.3	Type D	30.71	6.99	58.99	11.97	26.31	23.90
Offsite Watershed C	54.5	869.7	2,729.9	0.005	22.1	Type D	18.85	4.70	35.76	9.50	18.50	15.52
Offsite Watershed E	3.6	241.2	650.2	0.006	35.1	Type D	3.13	0.45	6.29	0.80	2.08	1.51
Subtotal	**138.5**	-	-	-	**29.6**	-	-	-	-	-	-	-
Onsite Watersheds												
Onsite Watershed 1	6.5	243.2	983.5	0.006	2.6	Type D	0.96	0.41	2.67	0.98	2.46	1.19
Onsite Watershed 2	21.7	289.3	2,091.2	0.004	11.1	Type D	5.46	1.43	11.06	3.28	6.25	4.53
Subtotal	**28.3**	-	-	-	**57.1**	-	-	-	-	-	-	-



WEST YOST - N:\Clients\9375330 Rio Linda, LLC\60-20-01 Robla Estates\GIS\MXD\Fig2.0_Existing Conditions_Hydrology.mxd - mmiller - 1/20/2022

Existing Storm Pipe Diameter (in.)

- 12" - <24"
- 24" - <60"
- ≥60"
- Levees
- Creeks
- Existing Watershed
- Bike Trail
- Storage

Elevation ft. NGVD88

- 26
- 28
- 30
- 32
- 34
- 36
- 38
- 40
- 42
- 44
- 46
- 48
- 50

0 250 500

Scale in Feet

Existing Land Use

- Church / Welfare
- Industrial
- Open Space
- Public / Utilities
- Residential
- Road
- Vacant

N

WEST YOST

Figure 2

Existing Conditions Hydrology

Robla Estates

5330 Rio Linda, LLC

PROPOSED WATERSHED CHARACTERISTICS

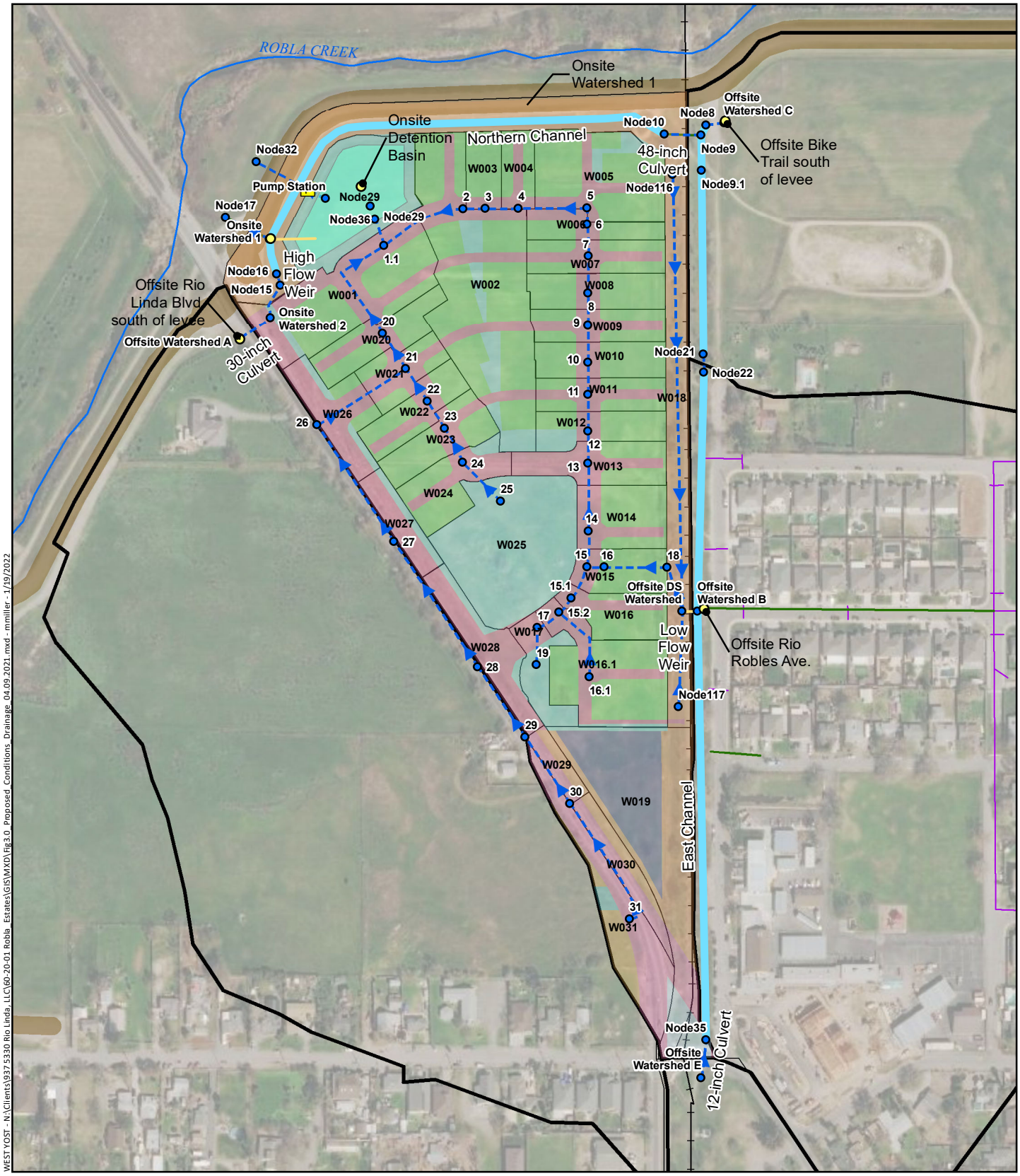
Onsite Watershed 1 was modified to reflect the site improvements proposed with the Robla Estates Development. Onsite Watershed 2 was replaced with Watersheds W001 through W031 for more precise delineation and routing to the proposed storm system. The proposed land use is primarily residential, with some commercial and open spaces. A composite infiltration rate was created to reflect the blend of proposed land uses, comprised of Medium Density Residential (70% impervious), Open Space (2% impervious), Recreation (5% impervious), Roads (95% impervious), and Commercial (95% impervious). Refer to Figure 3 and Table 2 for proposed watershed land use and hydrologic characteristics. No changes are proposed to any offsite watersheds. The following changes to flow path and infrastructure are listed by onsite watershed:

- Onsite Watershed 1 flows northwest to the Northern Channel, which conveys runoff to a 48-inch culvert that conveys runoff under the levee to Robla Creek.
- Watersheds W001 through W031 flow northwest through the proposed on-site pipe system to discharge to the proposed Detention Basin, which is also a discrete watershed. A watershed length of 150-feet was used for the proposed development watersheds.

In the model for proposed conditions, the existing storage surface storage volume remains on all offsite parcels and is removed on the Robla Estates site. All future upstream projects will be required to fully mitigate impacts of increased imperviousness.

Table 2. Proposed Watershed Characteristics

Subcatchment ID	Area, ac	Proposed Roadway Area, ac	Basin Length, ft	Basin Width, ft	Basin Slope, ft/ft	Composite Watershed Impervious Percent	NRCS Soil Type	10-Year, 24-Hour Peak Flow Rate, cfs	10-Year, 24-Hour Volume, ac-ft	100-Year, 24-Hour Peak Flow Rate, cfs	100-Year, 24-Hour Volume, ac-ft	100-Year, 10-Day Peak Flow Rate, cfs	100-Year, 10-Day Volume, ac-ft
Offsite Watersheds													
Offsite Watershed A	29.60	-	589	2,190	0.004	14.0	Type D	14.14	2.56	30.93	5.29	14.15	8.05
Offsite Watershed B	50.80	-	1,066	2,075	0.006	46.3	Type D	45.58	7.20	86.99	12.24	29.43	24.64
Offsite Watershed C	54.50	-	870	2,730	0.005	22.1	Type D	32.40	5.39	66.16	10.50	26.18	17.48
Offsite Watershed E	3.60	-	241	650	0.006	35.1	Type D	4.48	0.46	9.26	0.81	2.33	1.56
Subtotal	**138.50**	**-**	**-**	**-**	**-**	**29.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Onsite Watersheds													
Onsite Watershed 1	2.50	0.00	102	1,064	0.003	2.0	Type D	1.24	0.19	3.79	0.41	1.52	0.57
W-001	1.55	0.76	150	451	0.01	78.9	Type D	3.94	0.31	7.21	0.47	1.11	1.11
W-002	2.60	0.56	150	755	0.01	66.4	Type D	5.97	0.47	11.20	0.73	1.83	1.65
W-003	0.31	0.05	150	89	0.01	73.9	Type D	0.75	0.06	1.39	0.09	0.22	0.21
W-004	0.29	0.12	150	84	0.01	80.0	Type D	0.74	0.06	1.36	0.09	0.21	0.21
W-005	1.19	0.25	150	344	0.01	69.9	Type D	2.81	0.22	5.23	0.34	0.84	0.78
W-006	0.37	0.14	150	108	0.01	79.1	Type D	0.95	0.07	1.74	0.11	0.27	0.27
W-007	0.52	0.22	150	150	0.01	80.6	Type D	1.32	0.10	2.42	0.16	0.37	0.37
W-008	0.55	0.10	150	158	0.01	74.4	Type D	1.34	0.10	2.47	0.16	0.39	0.37
W-009	0.49	0.21	150	144	0.01	80.7	Type D	1.27	0.10	2.32	0.15	0.35	0.36
W-010	0.53	0.10	150	153	0.01	74.6	Type D	1.30	0.10	2.39	0.16	0.37	0.36
W-011	0.48	0.21	150	140	0.01	80.8	Type D	1.24	0.10	2.27	0.15	0.35	0.35
W-012	0.48	0.08	150	140	0.01	60.8	Type D	1.05	0.08	1.99	0.13	0.34	0.29
W-013	0.62	0.37	150	180	0.01	84.9	Type D	1.63	0.13	2.96	0.20	0.45	0.46
W-014	0.64	0.24	150	185	0.01	79.6	Type D	1.62	0.13	2.97	0.20	0.46	0.46
W-015	0.46	0.11	150	133	0.01	75.9	Type D	1.14	0.09	2.09	0.14	0.33	0.32
W-016	0.49	0.15	150	141	0.01	77.9	Type D	1.23	0.10	2.25	0.15	0.35	0.34
W-016.1	1.55	0.73	150	450	0.01	80.5	Type D	3.97	0.32	7.20	0.48	1.11	1.12
W-017	0.41	0.11	150	119	0.01	29.1	Type D	0.56	0.05	1.18	0.09	0.27	0.17
W-018	1.45	0.01	82	768	0.01	2.5	Type D	1.34	0.11	3.30	0.24	1.43	0.79
W-019	2.08	0.13	200	454	0.01	51.6	Type D	3.80	0.32	7.44	0.53	1.43	1.13
W-020	0.54	0.16	150	156	0.01	77.3	Type D	1.35	0.11	2.48	0.16	0.38	0.38
W-021	0.42	0.24	150	122	0.01	84.3	Type D	1.10	0.09	2.00	0.13	0.30	0.31
W-022	0.48	0.17	150	139	0.01	78.9	Type D	1.22	0.10	2.23	0.15	0.34	0.34
W-023	0.54	0.15	150	156	0.01	76.7	Type D	1.34	0.11	2.47	0.16	0.38	0.38
W-024	0.60	0.24	150	174	0.01	75.5	Type D	1.49	0.12	2.74	0.18	0.43	0.41
W-025	1.83	0.01	150	531	0.01	5.4	Type D	1.24	0.15	3.25	0.31	1.15	0.46
W-026	0.61	0.43	150	176	0.01	79.5	Type D	1.55	0.12	2.83	0.19	0.43	0.43
W-027	0.35	0.26	150	102	0.01	72.6	Type D	0.85	0.07	1.58	0.10	0.25	0.24
W-028	0.62	0.53	150	180	0.01	81.5	Type D	1.60	0.13	2.92	0.19	0.44	0.45
W-029	0.20	0.11	150	59	0.01	54.1	Type D	0.41	0.03	0.79	0.05	0.14	0.11
W-030	0.40	0.25	150	115	0.01	60.8	Type D	0.86	0.07	1.63	0.11	0.28	0.24
W-031	0.99	0.69	150	287	0.01	67.0	Type D	2.28	0.18	4.28	0.28	0.70	0.63
Detention Basin	1.36	0.00	110	538	0.01	5.5	Type D	1.14	0.11	2.84	0.23	0.87	0.35
Subtotal	**28.3**	**7.88**	**-**	**-**	**-**	**57.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**



WEST YOST - N:\Clients\937 5330 Rio Linda, LLC\60-20-01 Robla Estates\GIS\MXD\fig3.0_Proposed_Conditions_Drainage_04.09.2021.mxd - mmiller - 1/19/2022

- Modeled Link
- Modeled Node

Existing Storm Pipe Diameter (in.)

- 12" - <24"
- 24" - <60"
- ≥ 60"

- Basin Extents
- Levees
- Offsite Watersheds
- Onsite Subwatersheds
- Creeks
- Bike Trail
- Hydraulic Results Location

Proposed Land Use

- Commercial
- Medium Density Residential
- Open Space
- Recreation
- Road

0 150 300

Scale in Feet

N

WEST YOST

Figure 3

Proposed Conditions Hydrology

Robla Estates

5330 Rio Linda, LLC

PRELIMINARY BASIN AND PUMP STATION SIZING PROCESS

To determine the required size and outlet configurations for the detention basin, the following steps were taken:

- Determined the total tributary area and impervious percentage to be served by the detention basin.
- Determined the stormwater quality treatment volume (SWQV) for the detention basin based on the amount of Low Impact Development (LID) achieved above the minimum requirements.
- Performed hydrologic modeling with the Sacramento Area Hydrology Model (SAHM) to determine the required volume and outlet configuration to provide hydromodification mitigation.
- Performed hydrologic and hydraulic modeling with XPSWMM to determine the required storage volumes and outlet configurations for flood control, addressing the following City requirements:
  - 0.5-foot of freeboard is required to the DI Grate in the 10-year, 24-hour storm.
  - The detention basin crest must be equal or higher to the 100-year, 24-hour storm. No freeboard is required.
  - 1.0-foot of freeboard is required to the finished floor of new structures for the 100-year, 24-hour storm.
  - There are no overland releases from the basin triggering the need for public safety hazard criteria for sizing the detention basin.
- Performed hydrologic and hydraulic modeling with XPSWMM to meet alternative City controlling Overland Release Path (ORP) criteria. See Draft Conditions of Approval for an additional discussion:
  - The justification for the variance is that ORP low elevation release path is 39.6-ft NAVD88 which exceeds the 200-yr, 24-hour HGL of 39.7-ft NAVD88 with complete pump station failure.
  - City suggested alternative ORP criterion 1 to set minimum finished floor to the 100-year, 24-hour HGL with complete pump station failure. This resulting water surface elevation for this scenario is 38.7 feet NAVD88.
  - City suggested alternative ORP criterion 2 to set minimum 10-year, 24-hour HGL with complete pump failure at or below the top of the DI grates and no more than 6 inches above the gutter flowline in low lying areas.

DETENTION BASIN SIZING

The 100-year, 24-hour design storm was used to analyze peak flow to determine required conveyance capacities. The detention basin was also simulated for the 100-year, 10-day design storm rainfall to consider volume, as there is no emergency overland flow path. The Table 3 illustrates the detention basin geometry. A 45 cubic feet per second (cfs) firm capacity pump station is required to mitigate the peak flows in the basin, maintaining freeboard requirements. If additional area can be added to the

detention basin extents, the pump capacity could be decreased. A geotechnical evaluation will need to be conducted to assess the soil stability for building the detention basin adjacent the levee. The levee owner and operator will need to be notified of the detention basin and pump station construction.

Table 3 shows the detention basin and the associated pump station location. Currently, offsite flows make their way to the Northern Channel before being discharged to Robla Creek. A high flow weir was added to the Northern Channel to continue to route minor storm flows directly to the existing 48-inch culvert through the levee. Only when the water level in Robla Creek rises and the 48-inch culvert's flap gate is closed will flows overtop the weir (crest elevation 34-ft NAVD88) and spill into the detention basin. Once in the detention basin, flows will need to be pumped out. This high flow weir will minimize pumping during minor storm events when the water levels in Robla Creek are relatively low.

In addition to the high flow weir at the detention basin, a second weir is proposed at the East Channel. This low flow weir reduces pumping at the detention basin by routing minor event flows to the Northern Channel for gravity discharge to Robla Creek. In larger events, the highs flows will enter the detention basin. The East Channel bottom width will be expanded to 10-feet, with a 3-foot retaining wall running along the west side adjacent to the development. The east side of the East Channel will remain undisturbed. The Northern Channel and the Eastern Channel have a 1-foot freeboard in the 100-year storm.

Table 3. Elevation - Area-Storage Volume Data

Description	Elevation, ft, NAVD88	Depth	Area, sf	Area, ac	Volume, ac-ft
Bottom of Basin	26.0	0.0	11,485	0.26	0.00
	27.0	1.0	13,385	0.31	0.29
	28.0	2.0	15,414	0.35	0.62
WQV WSEL (29.1)	29.0	3.0	17,571	0.40	0.99
	30.0	4.0	19,856	0.46	1.42
	31.0	5.0	22,269	0.51	1.91
	32.0	6.0	24,810	0.57	2.45
	33.0	7.0	27,479	0.63	3.05
10-year, 24-hour WSEL (34.3)	34.0	8.0	30,276	0.69	3.71
100-year, 10-day WSEL (35.6)	35.0	9.0	33,201	0.76	4.44
100-year, 24-hour WSEL (36.2)	36.0	10.0	36,254	0.83	5.23
Top of Basin	36.5	10.5	37,828	0.87	5.66

ac-ft = acre-feet
sf = square feet

The following City detention basin design standards are met:

- Side slopes: 4H:1V
- Low flow channel slope at detention basin bottom: 1 percent
- Access road to bottom of pond

- Access road to the pump station

The pump station is sized for 45 cfs firm capacity and 60 cfs total capacity. The operation levels will meet the following design standards:

- Pump 1: Turns on at: Stormwater Quality WSEL (29.1-ft NAVD88)
- Pump 2: Turns on at: 1-foot Above Stormwater Quality WSEL (30.0-ft NAVD88)
- Pump 3: Turns on at: 2-feet Above Stormwater Quality WSEL (31.0-ft NAVD88)
- Pump 4: Redundant Pump

City flow meter installation standards will allow for the use of 90% of the pump curve flow rates; otherwise, the project is restricted to 75% of the pump curve flow rate. If utilizing a flow meter, further modeled pump operation (including on/off levels) will be added as an addendum.

FLOOD CONTROL BENEFIT

The Robla Estates detention basin and pump station will reduce the flood depth throughout the project site and in the offsite watersheds. Table 4 and Table 5 show the benefit of the detention basin and pump station at five locations (refer to Figure 1 for hydraulic results locations).

Table 4. 100-Year, 24-Hour Hydraulic Grade Line

Scenario	Onsite upstream of 48-inch discharge culvert, ft NAVD88	Onsite Detention Basin, ft NAVD88	Offsite Rio Linda Blvd. south of levee, ft NAVD88	Offsite Bike Trail south of levee, ft NAVD88	Offsite Rio Robles Ave., ft NAVD88
Ground Surface	38.0	36.5	38.0	41.2	41.8
Existing Condition	38.2	-	38.2	38.2	38.2
Proposed Condition	36.2	36.2	36.3	37.7	37.5

Table 5. 10-Year, 24-Hour Hydraulic Grade Line

Scenario	Onsite upstream of 48-inch discharge culvert, ft NAVD88	Onsite Detention Basin, ft NAVD88	Offsite Rio Linda Blvd. south of levee, ft NAVD88	Offsite Bike Trail south of levee, ft NAVD88	Offsite Rio Robles Ave., ft NAVD88
Ground Surface	38.0	36.5	38.0	41.2	41.8
Existing Condition	37.5	-	37.5	37.5	37.5
Proposed Condition	34.7	34.3	34.9	37.0	36.8

Consideration was given to ensuring that the pump station discharge rate have no significant impact to Robla Creek. FEMA freeboard requirements state that 3-ft of freeboard from 100-year water surface elevation to the levee crest is required. Currently there is 4-ft of freeboard in Robla Creek as indicated by the 100-year water surface elevation in the FEMA flood insurance study. The addition of 45 cfs to the 2,900 cfs contained in Robla Creek will not likely affect the water surface elevation or freeboard.

DRAFT CONDITIONS OF APPROVAL

A meeting was held with the City of Sacramento to discuss the Controlling Overland Release Path (ORP) criteria. Section 11 specifies the finished floor elevation of structures as 12-inches over the ORP, but adhering to this criteria would be infeasible at this site. The project site is the regional low point on the upstream side of the levee. The ORP of this site would be above Rio Linda Boulevard which is 39.9-ft NAVD88, higher than the 200-yr, 24-hour design storm HGL of 39.7-ft NAVD88 with complete pump station failure. The following ORP criteria has been established as a variance to Section 11 which will be incorporated into the Draft Conditions of Approval (COA):

- City suggested alternative ORP Criterion 1 to set minimum finished floor to the 100-year, 24-hour HGL with complete pump station failure 38.7 feet NAVD88. This criterion is similar to FEMA precedence.

- City suggested alternative ORP Criterion 2 to set minimum 10-year, 24-hour HGL with complete pump failure at or below the top of the DI grates and no more than 6 inches above the gutter flowline in low lying areas. At all locations the 10-year is below grade at manhole rim elevation with complete pump failure. At the lowest roadway rim elevation of 37.9-ft, the 10-year, 24-hour with complete pump failure, there is no water in the roadway (HGL is 37.8-ft NAVD88).

This additional modeling was considered when making the ORP variance:

- The FEMA/Community Rating System (CRS) finished floor requirements will be satisfied. Maximum 100-Year, 24-hour HGL of 36.2-ft NAVD88, below lowest pad of 38.7-ft NAVD88
- Dynamic analysis performed for more accurate decision-making tool:
  - 10-year, 24-hour HGL with complete station failure predicted at 37.8feet NAVD88
  - 100-year, 24-hour HGL with complete station failure predicted at 38.7 feet NAVD88
  - 200-year, 24-hour HGL with operational pump station predicted at 36.9 feet NAVD88
  - 200-year, 24-hour HGL with complete station failure predicted at 39.7 feet NAVD88

LOW IMPACT DEVELOPMENT AND WATER QUALITY

The implementation of the following low impact development (LID) features is required to manage onsite runoff and water quality. The following LID features together achieve above the 100-credit minimum, removing the need for additional water quality treatment measures.

- Natural Storage reservoirs and drainage corridors
- Buffer zones for natural water bodies
- Landscape area/park
- Flood Control/Drainage basin
- Infiltration Basin
- Disconnected Roof Drains
- Disconnected Pavement Worksheet

Attachment B details the calculations for the LID credits and refers to the SQDM to guide detailed design. Refer to Figure 4 for the potential spatial distribution of LID features that exceed the 100-credit minimum. Attachment A details the water quality volume of 1.01 acre-feet per the Stormwater Quality Design Manual (SQDM), that is planned for infiltration, as calculated by the Stormwater Quality Design Manual (SQDM). The City prefers infiltration basins over bio-retention basins, due to maintenance concerns. The detention basin's discharge structure has been designed to retain water for 48-hours.

In addition, the bottom of the detention pond (11,485 sq ft.) will be excavated and filled with a 2-foot-deep layer of gravel to promote infiltration. Using the SQDM recommendations for submerged gravel beds, an additional 0.15 acre-feet of storage will be added. The following design details from the SQDM will apply for the gravel:

- The gravel media will be 1" to 1-1/2" in size
- The bed depth is 2-feet
- The porosity of the gravel bed is 0.3

HYDROMODIFICATION AND OUTLET CONFIGURATION

Hydromodification control measures address changes to runoff characteristics from urbanization that result in the artificially altered rate of erosion or sedimentation within receiving waters. Based on the Hydromodification Mitigation Applicability Flow Chart provided in the 2018 Sacramento Region Stormwater Quality Design Manual (SQDM), the Study Area is not an exempt project and is therefore subject to hydromodification management requirements.

The detention basin was sized to provide hydromodification mitigation using the SAHM. The analysis was performed based on a pre-project and post-project evaluation of flow durations for flows ranging from 25 percent of the 2-year storm frequency to the 10-year storm frequency. Results of the hydromodification analyses are presented in Attachment A.

The detention basin outlet was configured with a riser pipe with a round orifice at the bottom for low flows. During large storm events that exceed the design event (10-year), excess flow can spill over the top of the riser. The orifice diameter and elevation were set to release 75 percent of the water quality volume in a minimum of 24 hours and the total design volume over an additional 24 hours. The water quality volume was calculated as 1.01 acre-feet. A 5mm (or smaller) screen at the orifice outlet will be added to address the State Water Resources Control Board Trash Amendments. The outlet geometry is as follows:

- Riser Diameter (in): 36
- Riser Height (ft): 6.5
- Orifice Diameter (in):4.25
- Orifice Height (in): 0.15

PRELIMINARY PIPE SIZING

Onsite storm pipes for the Robla Estates site have been sized to meet the City standards. Pipes were sized using XPSWMM. In addition to those standards mentioned in the Preliminary Basin and Pump Sizing Process section, the following standards have been addressed:

- Manning's roughness of 0.015 for concrete pipe to account for friction and minor losses.
- The minimum design velocity shall be two feet-per-second and the maximum velocity shall be 10 feet-per-second utilizing the Manning equation:
  - Assuming the pipe is flowing freely at a depth of 0.8 times the inside diameter (80% full), and
  - During a 100-year event.

A list of pipe characteristics and hydraulic results are listed in Table 6.

WEST YOST - N:\Clients\937 5330 Rio Linda, LLC\60-20-01 Robla Estates\GIS\MXD\Fig4.0 LID Credit Design.mxd - mmiller - 3/9/2022

Offsite Watersheds
Bike Trail

LID Features

Buildings/Parking
WQ/Infiltration
Natural Sotrage Reservoirs or Drainage Corridor
Buffer Zones for Natural Water Bodies
Flood Control/Drainage Basin
Landscape Area/Park
Streets and Driveways
Buildings (Disconnected)

N

0 150 300
Scale in Feet

WEST YOST

Figure 4

Reommended LID Features

Robla Estates
5330 Rio Linda, LLC
January 2022

Table 6. Hydraulic Results

Conduit Data									10-year, 24-hour Flows			100-year, 24-hour Flows				
Link Name	Upstream Node	Downstream Node	Upstream Rim Elevation	Downstream Rim Elevation	Upstream Invert	Downstream Invert	Diameter, ft	Roughness Manning's "n"	Upstream WSEL	Downstream WSEL	Maximum Flow, cfs	Upstream WSEL	Downstream WSEL	Maximum Flow, cfs	Maximum Velocity, ft/sec	Comment
253.1	1.1	Detention Basin	38.47	40.50	28.04	28.00	3.5	0.015	34.27	34.18	56.14	36.23	36.20	79.73	8.2	Proposed Pipe
299.1	2	1.1	38.87	38.47	28.17	28.04	3.5	0.015	34.45	34.31	38.19	36.31	36.23	48.73	5.0	Proposed Pipe
302.1	5	4	39.07	38.77	28.42	28.30	3.5	0.015	34.71	34.58	30.85	36.45	36.38	35.06	3.6	Proposed Pipe
305.1	14	13	39.37	39.07	29.28	29.10	3	0.015	35.88	35.59	25.62	37.16	36.95	25.82	3.6	Proposed Pipe
311.1	26	21	39.87	39.17	28.52	28.34	2.5	0.015	34.55	34.45	6.71	36.31	36.24	11.37	2.3	Proposed Pipe
313.1	27	26	39.67	39.87	28.90	28.52	2	0.015	34.83	34.55	5.23	36.92	36.31	8.62	2.7	Proposed Pipe
316.1	24	23	39.07	38.77	28.85	28.69	1.5	0.015	34.94	34.85	2.58	37.06	36.94	5.33	2.9	Proposed Pipe
322.1	25	24	37.00	39.07	29.13	28.85	1.5	0.015	34.96	34.94	1.17	37.07	37.06	3.85	2.1	Proposed Pipe
327.1	28	27	40.37	39.67	29.42	28.90	1.5	0.015	35.70	34.83	4.46	38.80	36.92	7.10	3.9	Proposed Pipe
330.1	29	28	41.07	40.37	29.71	29.42	1.5	0.015	35.94	35.70	2.98	39.19	38.80	4.82	2.6	Proposed Pipe
336.1	17	15.2	38.87	38.97	29.66	29.66	1.5	0.015	36.05	36.04	4.25	37.47	37.29	8.30	4.6	Proposed Pipe
341.1	23	22	38.77	38.97	28.69	28.58	1.5	0.015	34.85	34.71	3.84	36.94	36.67	6.67	3.7	Proposed Pipe
343.1	20	1.1	38.77	38.47	28.27	28.04	2.5	0.015	34.32	34.31	14.04	36.23	36.23	23.85	4.8	Proposed Pipe
345.1	21	20	39.17	38.77	28.34	28.27	2.5	0.015	34.45	34.32	12.74	36.24	36.23	21.45	4.3	Proposed Pipe
346.1	22	21	38.97	39.17	28.58	28.34	1.5	0.015	34.71	34.45	4.99	36.67	36.24	8.17	4.5	Proposed Pipe
349.1	3	2	38.57	38.87	28.24	28.17	3.5	0.015	34.52	34.45	32.25	36.35	36.31	37.60	3.9	Proposed Pipe
350.1	4	3	38.77	38.57	28.30	28.24	3.5	0.015	34.58	34.52	31.55	36.38	36.35	36.34	3.8	Proposed Pipe
352.1	6	5	38.67	39.07	28.47	28.42	3.5	0.015	34.74	34.71	28.09	36.47	36.45	30.57	3.2	Proposed Pipe
354.1	7	6	38.87	38.67	28.55	28.47	3.5	0.015	34.80	34.74	27.57	36.50	36.47	29.61	3.1	Proposed Pipe
356.1	8	7	38.72	38.87	28.65	28.55	3.5	0.015	34.86	34.80	27.29	36.53	36.50	28.84	3.0	Proposed Pipe
358.1	9	8	38.97	38.72	28.74	28.65	3	0.015	34.99	34.86	27.00	36.60	36.53	28.26	4.0	Proposed Pipe
360.1	10	9	39.27	38.97	28.83	28.74	3	0.015	35.15	34.99	26.74	36.68	36.60	27.80	3.9	Proposed Pipe
362.1	11	10	39.07	39.27	28.92	28.83	3	0.015	35.29	35.15	26.45	36.76	36.68	27.31	3.8	Proposed Pipe
364.1	12	11	38.67	39.07	29.02	28.92	3	0.015	35.45	35.29	26.20	36.86	36.76	26.87	3.8	Proposed Pipe
365.1	13	12	39.07	38.67	29.10	29.02	3	0.015	35.59	35.45	25.93	36.95	36.86	26.38	3.7	Proposed Pipe
368.1	15	14	38.87	39.37	29.38	29.28	3	0.015	36.03	35.88	25.30	37.29	37.16	25.30	3.5	Proposed Pipe
370.1	15.1	15	39.07	38.87	29.48	29.38	2	0.015	36.04	36.03	8.08	37.29	37.29	15.18	4.8	Proposed Pipe
394.1	15.2	15.1	38.97	39.07	29.66	29.48	2	0.015	36.04	36.04	8.13	37.29	37.29	15.29	4.8	Proposed Pipe
L18.1	Node116.1.1	16	38.35	38.74	29.57	29.43	3	0.015	36.28	36.09	23.40	37.48	37.33	21.66	3.0	Proposed Pipe
L19	19	17	38.00	38.87	30.15	29.66	1.5	0.015	36.06	36.05	3.74	37.97	37.47	7.27	4.0	Proposed Pipe
L30	30	29	41.20	41.07	30.00	29.71	1	0.015	37.40	35.94	2.70	41.23	39.19	4.30	5.2	Proposed Pipe
L31	31	30	43.50	41.20	30.75	30.00	1	0.015	38.64	37.40	2.03	43.54	41.23	2.95	3.5	Proposed Pipe
L32	16.1	15.2	38.00	38.97	30.20	29.66	2	0.015	36.04	36.04	3.93	37.30	37.29	7.15	2.2	Proposed Pipe
Link0	Offsite Watershed C	Node8	40.00	38.00	35.82	35.67	2	0.015	37.01	36.74	10.47	37.68	37.41	18.19	6.1	Proposed Pipe
Link1	Node9	Node10	41.80	39.28	35.65	35.28	4	0.015	36.73	36.19	9.87	37.41	36.88	22.65	4.4	Proposed Pipe
Link10	Node22	Offsite Watershed B	40.00	41.80	35.39	35.51	Channel	0.040	36.77	36.79	-6.12	37.46	37.51	-12.14	-0.7	Existing Channel
Link13	Onsite Watershed 2	Node15	39.00	38.00	33.24	33.12	3	0.015	34.75	34.73	5.94	36.28	36.27	11.64	2.5	Existing Culvert
Link14	Node8	Node9	38.00	41.80	35.67	35.65	Channel	0.040	36.74	36.73	10.48	37.41	37.41	18.10	0.9	Existing Channel
Link2	Offsite Watershed B	Offsite DS Watershed	41.80	38.18	36.00	35.68	2	0.015	36.79	36.46	28.64	37.51	37.53	50.06	8.7	Proposed Pipe
Link27	Offsite Watershed E	Node35	44.00	44.00	41.44	40.94	1	0.015	42.99	41.58	4.38	44.11	41.89	6.38	8.2	Existing Culvert
Link28	Node35	Offsite Watershed B	44.00	41.80	40.94	35.51	Channel	0.060	41.58	36.79	2.61	41.89	37.51	5.79	1.1	Existing Channel
Link3	Offsite Watershed A	Onsite Watershed 2	39.00	39.00	34.14	33.24	2.5	0.015	34.89	34.75	5.94	36.29	36.28	11.61	5.1	Existing Culvert
Link4	Node15	Node16	38.00	38.00	33.12	33.04	2.5	0.015	34.73	34.72	5.95	36.27	36.27	11.65	2.8	Existing Culvert
Link5	Onsite Watershed 1	Node17	39.28	46.00	32.84	31.23	4	0.015	34.72	38.00	0.00	36.27	42.00	0.00	0.0	No Discharge with flap gate
Link6	Node10	Onsite Watershed 1	39.28	39.28	35.28	32.84	Channel	0.035	36.19	34.72	9.66	36.88	36.27	22.26	1.6	Existing Channel
Link65	Node116	Offsite DS Watershed	38.68	38.18	35.68	34.40	Channel	0.035	36.38	36.37	-3.03	37.52	37.53	-14.44	-0.4	Existing Channel
Link66	Node117	Offsite DS Watershed	38.68	38.18	35.68	34.88	Channel	0.035	36.41	36.41	-1.23	37.53	37.53	-4.25	-0.3	Existing Channel
Link7	Node16	Onsite Watershed 1	38.00	39.28	33.04	32.84	Channel	0.035	34.72	34.72	6.02	36.27	36.27	12.43	-0.2	Existing Channel
Link8	Node9	Node9.1	41.80	37.64	35.65	35.64	Channel	0.040	36.73	36.73	-2.73	37.41	37.41	-9.73	-0.5	Existing Channel
Link8.1	Node9.1	Node21	37.64	40.00	35.64	35.58	Channel	0.040	36.73	36.76	-3.37	37.41	37.45	-10.33	-0.5	Existing Channel
Link9	Node21	Node22	40.00	40.00	35.58	35.39	4	0.015	36.76	36.77	-4.48	37.45	37.46	-10.75	-1.9	Existing Culvert

Attachment A

Hydromodification Analyses Results

Stormwater Quality Volume Calculation

Roblas Estates

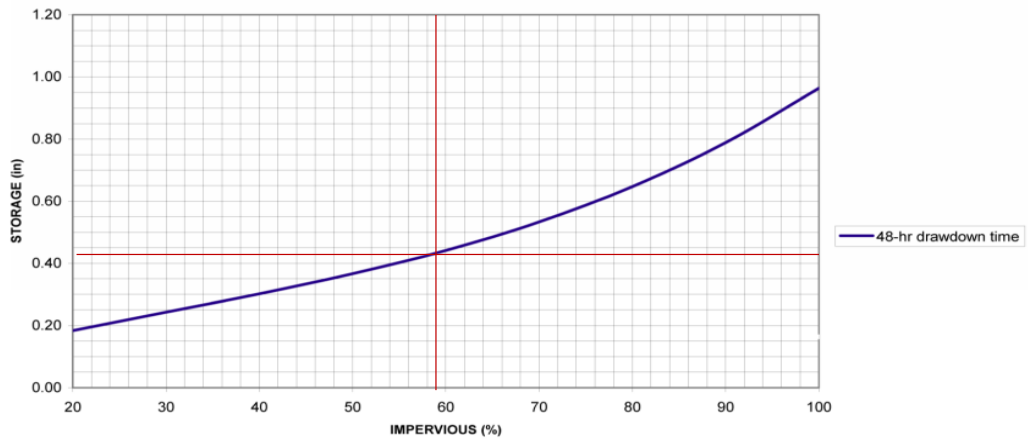
Water Quality Volume Calculation

Equation:

$$WQV(ac\text{-}ft) = P_0 * A/12$$

Variables:

54.6	%	Drainage shed impervious area
28.3	A	Drainage shed area in acres that drains to the proposed control measure
0.43	P_0	Maximized Detention Volume in watershed inches (From Graph)
1.01	WQV	Water Quality Volume in acre-feet



Source: URBAN RUNOFF QUALITY MANAGEMENT: WEF Manual of Practice No. 23 and Report on Engineering Practice No. 87.

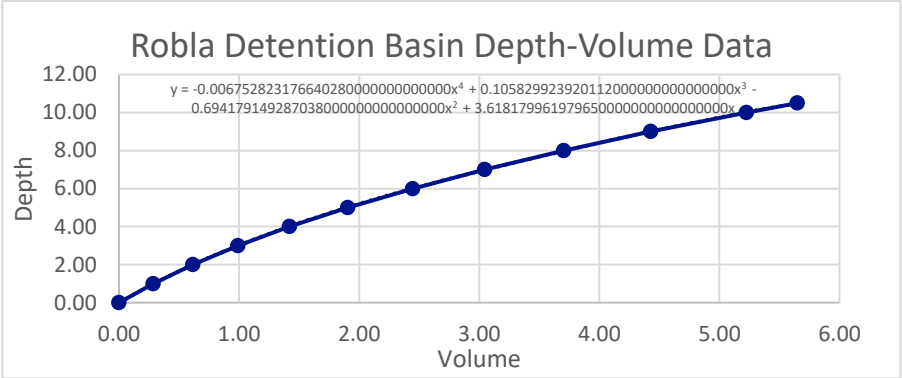
Curve for Maximized Detention Volume P_0	Date: August 2006
	Figure: E-3

Orifice Design for Risers

Roblas Estates

Water Quality Volume Calculation

Key:
WQCV
Manually input
Design Criteria



Orifice Coeff	0.61
Orifice Elev.* (ft)	0.15
Orifice Dia (in)	4.25
Orifice Dia (ft)	0.35
Orifice Area (sf)	0.099

Time (hr)	Volume of water (ac-ft)	Water Elevation (ft)	Orifice Equ Flow (cfs)
0.00	1.01	3.06	0.82
1.00	0.95	1.02	0.45
2.00	0.91	0.92	0.42
3.00	0.87	0.88	0.41
4.00	0.84	0.85	0.40
5.00	0.81	0.82	0.39
6.00	0.77	0.79	0.38
7.00	0.74	0.75	0.37
8.00	0.71	0.72	0.37
9.00	0.68	0.69	0.36
10.00	0.65	0.66	0.35
11.00	0.62	0.64	0.34
12.00	0.59	0.61	0.33
13.00	0.57	0.58	0.32
14.00	0.54	0.56	0.31
15.00	0.52	0.53	0.30
16.00	0.49	0.51	0.29
17.00	0.47	0.48	0.28
18.00	0.44	0.46	0.27
19.00	0.42	0.44	0.26
20.00	0.40	0.41	0.25
21.00	0.38	0.39	0.24
22.00	0.36	0.37	0.23
23.00	0.34	0.35	0.22
24.00	0.32	0.34	0.21
25.00	0.31	0.32	0.20
26.00	0.29	0.30	0.19
27.00	0.27	0.29	0.18

- For single orifice outlet control or single row of orifices at the permanent pool elevation (WS Elevpp) (see Figure CWB-1), use the orifice equation based on the WQV (ft3) and depth of water above orifice centerline D (ft) to determine orifice area (ft2):

Orifice Equation

$Q = C \times A \times (2gD)^{1/2}$

Where:

Q = Flow rate, (cfs)

C = Orifice coefficient (use 0.61)

A = Area of orifice, (ft^2)

g = Acceleration due to gravity (32.2 ft/sec^2)

D = Depth of water above orifice centerline (D_{WQV})

28.00	0.26	0.27	0.17
29.00	0.25	0.26	0.16
30.00	0.23	0.24	0.15
31.00	0.22	0.23	0.14
32.00	0.21	0.22	0.13
33.00	0.20	0.21	0.12
34.00	0.19	0.20	0.11
35.00	0.18	0.19	0.10
36.00	0.17	0.18	0.08
37.00	0.17	0.17	0.07
38.00	0.16	0.17	0.06
39.00	0.15	0.16	0.05
40.00	0.15	0.16	0.04
41.00	0.15	0.15	0.03
42.00	0.14	0.15	0.02
43.00	0.14	0.15	#NUM!
44.00	#NUM!	#NUM!	#NUM!
45.00	#NUM!	#NUM!	#NUM!
46.00	#NUM!	#NUM!	#NUM!
47.00	#NUM!	#NUM!	#NUM!
48.00	#NUM!	#NUM!	#NUM!

SAHM

PROJECT REPORT

General Model Information

Project Name:	SAHM_Robla Estates_Hydro
Site Name:	Robla Estates
Site Address:	Rio Linda Blvd.
City:	Sacramento
Report Date:	1/21/2022
Gage:	RANCHO C
Data Start:	1961/10/01
Data End:	2004/09/30
Timestep:	Hourly
Precip Scale:	0.94
Version Date:	2016/03/29

POC Thresholds

Low Flow Threshold for POC1:	25 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

DRAFT

Landuse Basin Data

Pre-Project Land Use

Onsite Watersheds

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
D,Grass,Flat(0-1%)	25.64
Pervious Total	25.64
Impervious Land Use	acre
Imperv,Flat(0-1%)	2.58
Impervious Total	2.58
Basin Total	28.22

Element Flows To:

Surface	Interflow	Groundwater

DRAFT

Mitigated Land Use

Proposed Watersheds

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
D,Urban,Flat(0-1%)	12.13
Pervious Total	12.13
Impervious Land Use	acre
Imperv,Flat(0-1%)	16.15
Impervious Total	16.15
Basin Total	28.28

Element Flows To:

Surface	Interflow	Groundwater
SSD Table 1	SSD Table 1	

DRAFT

Routing Elements
Pre-Project Routing

DRAFT

Mitigated Routing

SSD Table 1

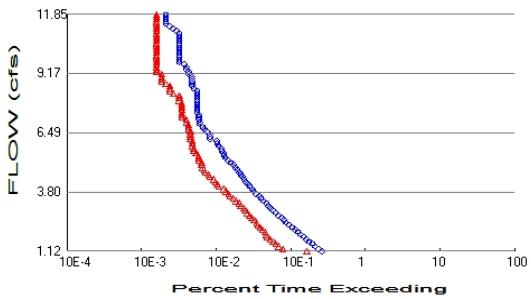
Depth: 11 ft.
Element Flows To:
Outlet 1 Outlet 2

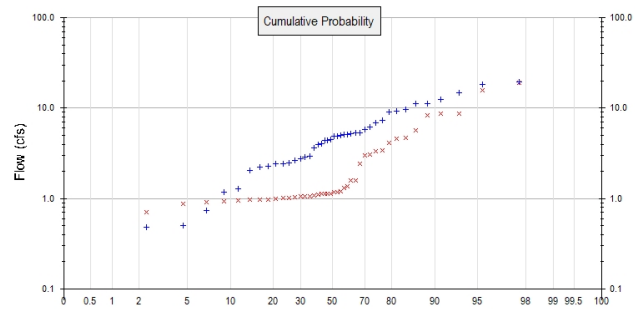
SSD Table Hydraulic Table

Stage (feet)	Area (ac.)	Volume (ac-ft.)	Outlet Struct	NotUsed	NotUsed	NotUsed	NotUsed
0.000	0.260	0.000	0.000	0.000	0.000	0.000	0.000
1.000	0.310	0.290	0.452	0.000	0.000	0.000	0.000
2.000	0.350	0.620	0.667	0.000	0.000	0.000	0.000
3.000	0.400	0.990	0.827	0.000	0.000	0.000	0.000
4.000	0.460	1.420	0.962	0.000	0.000	0.000	0.000
5.000	0.510	1.910	1.079	0.000	0.000	0.000	0.000
6.000	0.570	2.450	1.186	0.000	0.000	0.000	0.000
7.000	0.630	3.050	5.247	0.000	0.000	0.000	0.000
8.000	0.690	3.710	32.75	0.000	0.000	0.000	0.000
9.000	0.760	4.430	43.98	0.000	0.000	0.000	0.000
10.000	0.830	5.230	52.64	0.000	0.000	0.000	0.000
11.00	0.870	5.650	60.05	0.000	0.000	0.000	0.000

DRAFT

Analysis Results
POC 1





+ Pre-Project x Mitigated

Pre-Project Landuse Totals for POC #1
Total Pervious Area: 25.64
Total Impervious Area: 2.58

Mitigated Landuse Totals for POC #1
Total Pervious Area: 12.13
Total Impervious Area: 16.15

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	**Flow(cfs)**
2 year	4.46704
5 year	9.136381
10 year	11.8537
25 year	18.592377

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	1.1374
5 year	4.19996
10 year	8.497806
25 year	16.116023

DRAFT

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #1

Year	**Pre-Project**	**Mitigated**
1962	5.074	3.411
1963	2.638	1.125
1964	1.289	0.957
1965	4.885	1.582
1966	0.740	0.933
1967	5.007	4.588
1968	2.065	0.914
1969	4.467	1.179
1970	3.643	1.208
1971	5.367	4.114
1972	0.482	0.873
1973	11.196	1.183
1974	3.918	1.083
1975	5.231	1.047

1976	0.412	0.702
1977	0.505	0.566
1978	5.847	1.132
1979	2.224	1.001
1980	9.312	1.137
1981	1.185	1.062
1982	9.097	5.639
1983	11.242	8.779
1984	4.422	3.071
1985	2.771	1.306
1986	18.428	15.629
1987	2.426	1.005
1988	4.067	0.961
1989	6.174	1.124
1990	5.099	1.110
1991	4.380	1.582
1992	6.819	2.980
1993	4.915	1.375
1994	2.445	1.008
1995	19.631	19.201
1996	12.364	3.322
1997	14.857	8.309
1998	9.669	8.655
1999	2.949	1.042
2000	7.299	4.712
2001	2.470	0.977
2002	2.262	0.979
2003	2.852	1.060
2004	5.287	2.425

DRAFT

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	19.6309	19.2005
2	18.4284	15.6290
3	14.8565	8.7791
4	12.3637	8.6550
5	11.2417	8.3092
6	11.1964	5.6388
7	9.6690	4.7118
8	9.3122	4.5881
9	9.0973	4.1137
10	7.2986	3.4113
11	6.8194	3.3219
12	6.1740	3.0712
13	5.8469	2.9804
14	5.3672	2.4249
15	5.2868	1.5823
16	5.2312	1.5822
17	5.0994	1.3750
18	5.0736	1.3059
19	5.0071	1.2079
20	4.9147	1.1830
21	4.8852	1.1787
22	4.4670	1.1374
23	4.4220	1.1325
24	4.3802	1.1252
25	4.0675	1.1240

26	3.9176	1.1096
27	3.6434	1.0829
28	2.9495	1.0615
29	2.8519	1.0598
30	2.7710	1.0469
31	2.6375	1.0421
32	2.4697	1.0076
33	2.4446	1.0045
34	2.4256	1.0007
35	2.2620	0.9788
36	2.2237	0.9768
37	2.0653	0.9613
38	1.2892	0.9572
39	1.1848	0.9326
40	0.7397	0.9145
41	0.5048	0.8728
42	0.4822	0.7023
43	0.4123	0.5664

DRAFT

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
1.1168	987	619	62	Pass
1.2252	885	297	33	Pass
1.3337	795	262	32	Pass
1.4421	732	237	32	Pass
1.5506	664	220	33	Pass
1.6590	610	200	32	Pass
1.7675	568	184	32	Pass
1.8759	516	177	34	Pass
1.9844	471	170	36	Pass
2.0928	434	158	36	Pass
2.2013	393	146	37	Pass
2.3098	356	137	38	Pass
2.4182	330	132	40	Pass
2.5267	308	122	39	Pass
2.6351	282	112	39	Pass
2.7436	254	105	41	Pass
2.8520	237	98	41	Pass
2.9605	215	93	43	Pass
3.0689	200	88	44	Pass
3.1774	189	80	42	Pass
3.2858	179	78	43	Pass
3.3943	163	69	42	Pass
3.5027	150	64	42	Pass
3.6112	142	58	40	Pass
3.7197	129	56	43	Pass
3.8281	121	51	42	Pass
3.9366	115	48	41	Pass
4.0450	106	41	38	Pass
4.1535	100	39	39	Pass
4.2619	94	37	39	Pass
4.3704	89	35	39	Pass
4.4788	85	31	36	Pass
4.5873	81	30	37	Pass
4.6957	76	27	35	Pass
4.8042	73	26	35	Pass
4.9126	68	25	36	Pass
5.0211	65	24	36	Pass
5.1296	59	24	40	Pass
5.2380	54	22	40	Pass
5.3465	50	22	44	Pass
5.4549	48	22	45	Pass
5.5634	47	20	42	Pass
5.6718	45	19	42	Pass
5.7803	44	19	43	Pass
5.8887	41	18	43	Pass
5.9972	39	18	46	Pass
6.1056	38	18	47	Pass
6.2141	31	17	54	Pass
6.3225	31	17	54	Pass
6.4310	31	17	54	Pass
6.5395	28	17	60	Pass
6.6479	26	16	61	Pass
6.7564	25	16	64	Pass

DRAFT

6.8648	23	16	69	Pass
6.9733	23	15	65	Pass
7.0817	22	15	68	Pass
7.1902	22	13	59	Pass
7.2986	22	13	59	Pass
7.4071	21	13	61	Pass
7.5155	21	13	61	Pass
7.6240	21	13	61	Pass
7.7325	21	13	61	Pass
7.8409	21	13	61	Pass
7.9494	21	12	57	Pass
8.0578	21	12	57	Pass
8.1663	21	12	57	Pass
8.2747	21	10	47	Pass
8.3832	21	9	42	Pass
8.4916	19	9	47	Pass
8.6001	18	9	50	Pass
8.7085	18	8	44	Pass
8.8170	18	7	38	Pass
8.9254	18	7	38	Pass
9.0339	18	7	38	Pass
9.1424	16	7	43	Pass
9.2508	16	6	37	Pass
9.3593	15	6	40	Pass
9.4677	15	6	40	Pass
9.5762	14	6	42	Pass
9.6846	12	6	50	Pass
9.7931	12	6	50	Pass
9.9015	12	6	50	Pass
10.0100	12	6	50	Pass
10.1184	12	6	50	Pass
10.2269	12	6	50	Pass
10.3353	12	6	50	Pass
10.4438	12	6	50	Pass
10.5523	12	6	50	Pass
10.6607	12	6	50	Pass
10.7692	12	6	50	Pass
10.8776	12	6	50	Pass
10.9861	12	6	50	Pass
11.0945	11	6	54	Pass
11.2030	10	6	60	Pass
11.3114	9	6	66	Pass
11.4199	8	6	75	Pass
11.5283	8	6	75	Pass
11.6368	8	6	75	Pass
11.7452	8	6	75	Pass
11.8537	8	6	75	Pass

DRAFT

Water Quality

DRAFT

POC 2

POC #2 was not reported because POC must exist in both scenarios and both scenarios must have been run.

DRAFT

POC 3

POC #3 was not reported because POC must exist in both scenarios and both scenarios must have been run.

DRAFT

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

IMPLND Changes

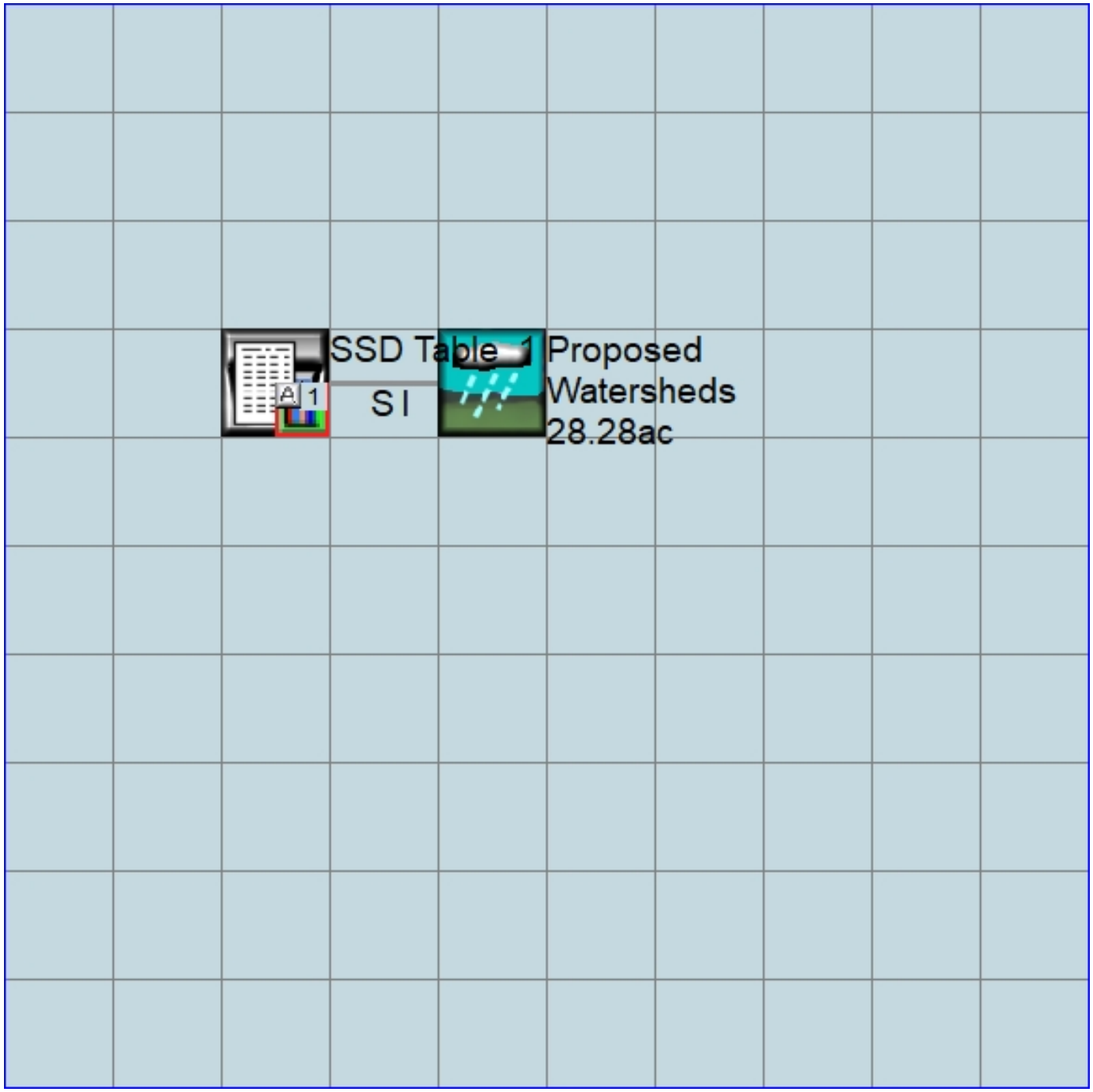
No IMPLND changes have been made.

DRAFT

Appendix

Pre-Project Schematic

Mitigated Schematic



DRAFT

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1961 10 01        END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                               ***
WDM        26   SAHM_Robla Estates_Hydro.wdm
MESSU      25   MitSAHM_Robla Estates_Hydro.MES
           27   MitSAHM_Robla Estates_Hydro.L61
           28   MitSAHM_Robla Estates_Hydro.L62
           30   POCSAHM_Robla Estates_Hydro1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:60
      PERLND      57
      IMPLND       1
      RCHRES       1
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        SSD Table  1              MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                           in  out           ***
   57     D,Urban,Flat(0-1%)      1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   57         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
```

DRAFT

```
  57         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
  57         0    0    0    1    0    0    0    0    1    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
  57              0      4.45      0.02       400      0.01         3      0.92
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
  57             40        35         2         2         0         0      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
  57              0       0.3      0.25       0.5       0.4         0
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
  57       0.5  0.5  0.5  0.6 0.65 0.65 0.65 0.65 0.65 0.65 0.55  0.5
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
  57      0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
  57              0         0      0.15         0         4      0.05         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                       in  out           ***
    1     Imperv,Flat(0-1%)       1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
```

DRAFT

```
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            100      0.01      0.05       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Proposed Watersheds***
PERLND  57                      12.13     RCHRES   1      2
PERLND  57                      12.13     RCHRES   1      3
IMPLND   1                      16.15     RCHRES   1      5

******Routing******
PERLND  57                      12.13     COPY     1     12
IMPLND   1                      16.15     COPY     1     15
PERLND  57                      12.13     COPY     1     13
RCHRES   1                          1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<-----------------><---> User T-series  Engl Metr LKFG            ***
                                          in  out                            ***
    1     SSD Table  1            1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
```

DRAFT

```
    RCHRES  Flags for each HYDR Section                                    ***
    # -   #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
    1        0  1  0  0    4  0  0  0  0       0  0  0  0  0        2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -   #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1               1      0.01       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -   # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1            0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   12    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.260000  0.000000  0.000000
  1.000000  0.310000  0.290000  0.451904
  2.000000  0.350000  0.620000  0.666688
  3.000000  0.400000  0.990000  0.827483
  4.000000  0.460000  1.420000  0.961761
  5.000000  0.510000  1.910000  1.079462
  6.000000  0.570000  2.450000  1.185535
  7.000000  0.630000  3.050000  5.246885
  8.000000  0.690000  3.710000  32.75419
  9.000000  0.760000  4.430000  43.97818
  10.00000  0.830000  5.230000  52.64104
  11.00000  0.870000  5.650000  60.05271
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    0.944          PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    0.944          IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.85           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.85           IMPLND   1 999 EXTNL  PETINP
WDM     22 IRRG     ENGL    0.7       SAME PERLND  57     EXTNL  SURLI

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1001 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     12.1      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2
```

DRAFT

```
  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       16
RCHRES     ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK   16


END MASS-LINK

END RUN
```

DRAFT

Pre-Project HSPF Message File

DRAFT

Mitigated HSPF Message File

DRAFT

Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages. Software Copyright © by : Clear Creek Solutions, Inc. 2005-2022; All Rights Reserved.

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

DRAFT

Attachment B

Low Impact Development Credits and Treatment BMP Sizing Calculations for Residential Sites

Appendix D-1: Residential Sites: Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations

Name of Drainage Shed: Robla Estates
Location of project: Sacramento

Fill in Blue Highlighted boxes

Step 1 - Open Space and Pervious Area Credits

Is your project within the drainage area of a common drainage plan that includes open space? If not, skip to 1 b.

1 a. Common Drainage Plan Area		acres	A_{CDP}	
Common Drainage Plan Open Space (Off-project)	0	acres	A_{OS}	**see area example below**
a. Natural storage reservoirs and drainage corridors	0	acres		
b. Buffer zones for natural water bodies	0	acres		
c. Natural areas including existing trees, other vegetation, and soil	0	acres		
d. Common landscape area/park	0	acres		
e. Regional Flood Control/Drainage basins	0	acres		
1 b. Project Drainage Shed Area (Total)	28.30	acres	A	
Project-Specific Open Space (In-project, communal)**	9.49	acres	A_{PSOS}	**see area example below**
a. Natural storage reservoirs and drainage corridors	2.39	acres		
b. Buffer zones for natural water bodies	2.24	acres		
c. Natural areas including existing trees, other vegetation, and soil	0.00	acres		
d. Landscape area/park	4.00	acres		
e. Flood Control/Drainage basins	0.86	acres		

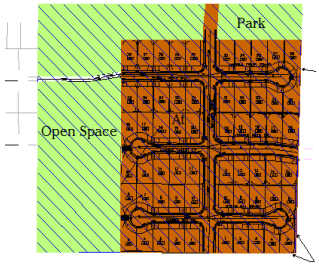
** Doesn't include impervious areas within individual lots and surrounding individual units. That is accounted for below using Form D-1a in Step 2.

Area with Runoff Reduction Potential	$A - A_{PSOS}$ =	18.81	acres	A_T
Number of Units in A_T		177		
Number of units per acre in A_T	DU/A_T =	10	DUA	
Assumed Initial Impervious Fraction of A_T (determined using Table D-1a)		0.6	I	

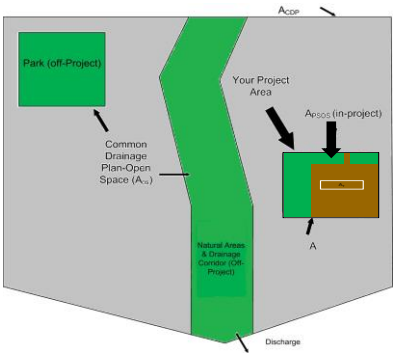
Open Space & Pervious Area LID Credit (Step 1)
$(A_{OS}/A_{CDP}+A_{PSOS}/A)x100$ = 34 pts

Table D-1a

Dwelling units per acre	Imperviousness
1	0.17
2	0.25
3,4	0.35
5,6	0.40
7	0.50
8,9	0.55
10-14	0.60
15-20	0.70



- A - Drainage Shed Area
- A_{PSOS} Parks and Open Space
- A_T - Area with Runoff Reduction Potential



Step 2 - Runoff Reduction Credits

Runoff Reduction Measures			Effective Area Managed (A_C)	
Disconnected Roof Drains (see Fact Sheet)	use Form D-1a for credits	→	1.04	acres
Disconnected Pavement (see Fact Sheet)	use Form D-1b for credits	→	0.11	acres
Interceptor Trees (see Fact Sheet)	use Form D-1c for credits	→	0.00	acres
Alternative Driveway Design (see Fact Sheet)	use Form D-1d for credits	→	0.00	acres
Total Effective Area Managed (Credit Area)		A_C	1.15	acres EAM

Runoff Reduction Credit (Step 2) $(A_C / A_T)*100$ = 6 pts

Form D-1a: Disconnected Roof Drains Worksheet

See Fact Sheet for more information regarding Disconnected Roof Drain credit guidelines

Effective Area Managed (A_C)

1. Determine efficiency Multiplier

Runoff is directed to a dispersal trench or dry well (Type A and B soils only)		1.00
Runoff is directed across landscaping, determine setback		
25 ft +	Use multiplier of	1.00
≥ 20 and < 25 ft	Use multiplier of	0.90
≥ 15 and < 20 ft	Use multiplier of	0.70
≥ 10 and < 15 ft	Use multiplier of	0.45
≥ 5 and < 10 ft	Use multiplier of	0.25

Efficiency Multiplier → 1.00 Box J1

2. Determine percentage of roof drains disconnected → 25.0% Box J2

3. Select project density in dwelling units per acre:

1	Use reduction factor of	0.08
2	Use reduction factor of	0.13
3,4	Use reduction factor of	0.19
5,6	Use reduction factor of	0.23
7	Use reduction factor of	0.29
8,9	Use reduction factor of	0.33
10-14	Use reduction factor of	0.37
15-20	Use reduction factor of	0.44

Reduction Factor → 0.37 Box J3

4. Determine Area Managed

Multiply Box J3 by A_T, and enter the result in Box J4 — 6.9 acres Box J4

5. Multiply Boxes J1, J2 and J4, and enter 60% of the Result in Box J — 1.0 acres Box J

This is the amount of area credit to enter into the "Disconnected Roof Drains" Box of Form D-1

Form D-1b: Disconnected Pavement Worksheet

See Fact Sheet for more information regarding NDC Pavement credit guidelines

Effective Area Managed (A_C)

Divided Sidewalks

1. Determine percentage of units with divided Sidewalks — 25.0% Box K1

Multiply Box K1, A_T, and 0.04 and enter 60% of the result in Box K — 0.11 acres Box K

This is the amount of area credit to enter into the "Disconnected Pavement" Box of Form D-1

Form D-1c: Interceptor Tree Worksheet

See Fact Sheet for more information regarding Interceptor Tree credit guidelines

Effective Area Managed (A_C)

New Evergreen Trees

1. Enter number of new evergreen trees that qualify as Interceptor Trees in Box L1. — trees Box L1

2. Multiply Box L1 by 200 and enter result in Box L2 — 0 sq. ft. Box L2

New Deciduous Trees

3. Enter number of new deciduous trees that qualify as Interceptor Trees in Box L3. — trees Box L3

4. Multiply Box L3 by 100 and enter result in Box L4 — 0 sq. ft. Box L4

Existing Tree Canopy

5. Enter square footage of existing tree canopy that qualifies as Existing Tree canopy in Box L5. — sq. ft. Box L5

6. Multiply Box L5 by 0.5 and enter the result in Box L6 — 0 sq. ft. Box L6

Total Interceptor Tree Credits

Add Boxes L2, L4, and L6 and enter it into Box L7 — 0 sq. ft. Box L7

Divide Box L7 by 43,560 and multiply by 20% to get effective area managed and enter the result in Box L8 — 0.00 acres Box L8

This is the amount of area credit to enter into the "Interceptor Trees" Box of Form D-1

Form D-1d: Alternative Driveway Design

See Fact Sheet for more information regarding Alternative Driveway Design credit guidelines

1. Select type of driveway

Pervious Driveway:	Multiplier:
Cobblestone Block P	0.40
Pervious Concrete/A	0.60
Modular Block Porous Pavement Porous Gravel	0.75
Not Directly-connected I	1.00

Box M1

2. Determine percentage of units with Alternative Driveways: — Box M2

4. Multiply Boxes M1, M2, A_T and 0.04, and enter the result in Box M — 0.00 acres

This is the amount of area credit to enter into the "Alternative Driveway Design" Box of Form D-1

Step 3 - Runoff Management Credits

Capture and Use Credits

Impervious Area Managed by Rain barrels, Cisterns, and automatically-emptied systems
(see Fact Sheet) _____ enter gallons, for simple rain barrels — 0.00 acres

Automated-Control Capture and Use System
(see Fact Sheet, then enter impervious area managed by the system) — 0.00 acres

Bioretention/Infiltration Credits

Impervious Area Managed by Bioretention BMPs
(see Fact Sheet)

Bioretention Area		sq ft	(Private Maintenance)
Subdrain Elevation		inches	
Ponding Depth, inches		inches	0.00 acres

Impervious Area Managed by Infiltration BMPs
(see Fact Sheet)

	Drawdown Time, hrs	48	drawdown_hrs_inf	
	Soil Infiltration Rate, in/hr	0.50	soil_inf_rate	
Sizing Option 1:	Capture Volume, acre-ft	1.01	capture_vol_inf	12.59 acres
Sizing Option 2:	Infiltration BMP surface area, sq ft		soil_surface_area	0.00 acres
Basin or trench?			approximate BMP depth	2.00 ft

Impervious Area Managed by Amended Soil or Mulch Beds
(see Fact Sheet) Mulched Infiltration Area, sq ft _____ mulch_area — 0.00 acres

Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs — 12.59 A_{LIDc}

Runoff Management Credit (Step 3) A_{LIDc}/A_T*200 = 133.8 pts

Total LID Credits (Step 1+2+3) LID compliant, check for treatment sizing in Step 4 — 173.5

Does project require hydromodification management? If yes, proceed to using SacHM.

Adjusted Area for Flow-Based, Non-LID Treatment $A_T - A_C - A_{LIDC}$ = 5.07 A_{AT}

Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $(A_T*I-A_C-A_{LIDC}) / A$ = 0.000 I_A

STOP: No additional treatment needed

Step 4a Treatment - Flow-Based (Rational Method)

Form D-1e

Calculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Adjusted Treatment Area

Determine C Factor using Table D-1b		C
Determine i using Table D-1c (Rainfall Intensity)	0.18	i
A_{AT} from Step 2	5.07	A_{AT}
Flow = C * i * A_{AT}	0.00	cfs

TABLE D-1b

Development Type	Runoff Coefficient (Rational), C
Single-family areas	0.50
Multi-units, detached	0.60
Apartment dwelling areas	0.70
Multi-units, attached	0.75
User Specified	0.00

Table D-1c

Rainfall Intensity			
Roseville	i =	0.20	in/hr
Sacramento	i =	0.18	in/hr
Folsom	i =	0.20	in/hr

Step 4b Treatment - Volume-Based (ASCE-WEF)

Calculate water quality volume (Acre-Feet): WQV = Area x Maximized Detention Volume (P_0)

Obtain A from Step 1	28.30	A	_____ hrs	Specified Draw Down time
Obtain P_0: Maximized Detention Volume from figures E-1 to 4 in Appendix E of this manual using I_A from Step 2.	E- 0.00	P_0		
Calculate treatment volume (acre-ft): **Treatment volume = A x (P_0 / 12)**	0.00	Acre-Feet		

v06232012

APPENDIX J
ENVIRONMENTAL NOISE ASSESSMENT

Environmental Noise Assessment

Robla Estates Subdivision

City of Sacramento, California

BAC Job # 2022-013

Prepared For:

5330 Rio Linda, LLC.

Attn: Ralph Swift
P.O. Box 3038
Granite Bay, CA 95746

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Principal Consultant

February 18, 2022

BOLLARD
Acoustical Consultants

Introduction

The Robla Estates Subdivision (project) is located between Rio Linda Boulevard and Rose Street in Sacramento, California. The project consists of the construction of approximately 178 single-family residential lots on land currently undeveloped. The project area with aerial imagery is shown on Figure 1. The project site plan is presented as Figure 2.

Due to the potential for elevated Rio Linda Boulevard traffic noise levels at the project site, the City of Sacramento Community Development Department has requested that an acoustical assessment be prepared. In response to the City's request, Bollard Acoustical Consultants, Inc. (BAC) was retained to prepare this acoustical assessment. Specifically, the purposes of this assessment are to quantify noise levels associated with future Rio Linda Boulevard traffic noise levels at the project site, to assess the state of compliance of those noise levels with applicable City of Sacramento noise criteria, and if necessary, to recommend measures to reduce those noise levels to acceptable limits.

Noise Fundamentals and Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard, and thus are called sound. Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness. Appendix A contains definitions of Acoustical Terminology. Figure 3 shows common noise levels associated with various sources.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in decibels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}) over a given time period (usually one hour). The L_{eq} is the foundation of the day-night average level noise descriptor, L_{dn} or DNL, and shows very good correlation with community response to noise.

Legend

Project Border (Approximate)

Traffic Calibration Measurement Location

N

Scale (Feet)

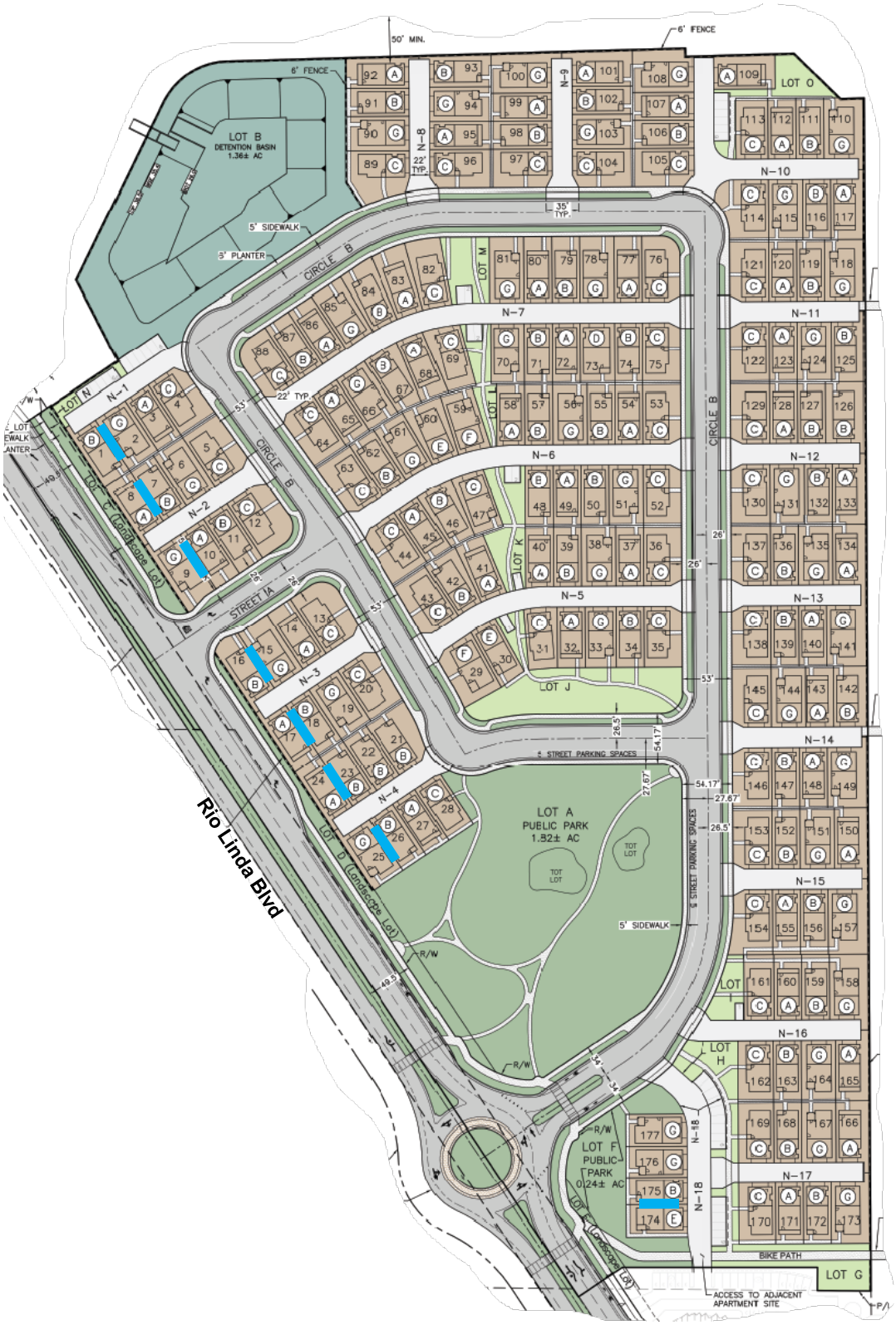
0 150 300

Robla Estates Subdivision
Sacramento, California

Project Area

Figure 1

BOLLARD
Acoustical Consultants



Legend

Proposed Primary Open Spaces (Residential Side Yards)

N

Scale (Feet)

0 75 150

Robla Estates Subdivision

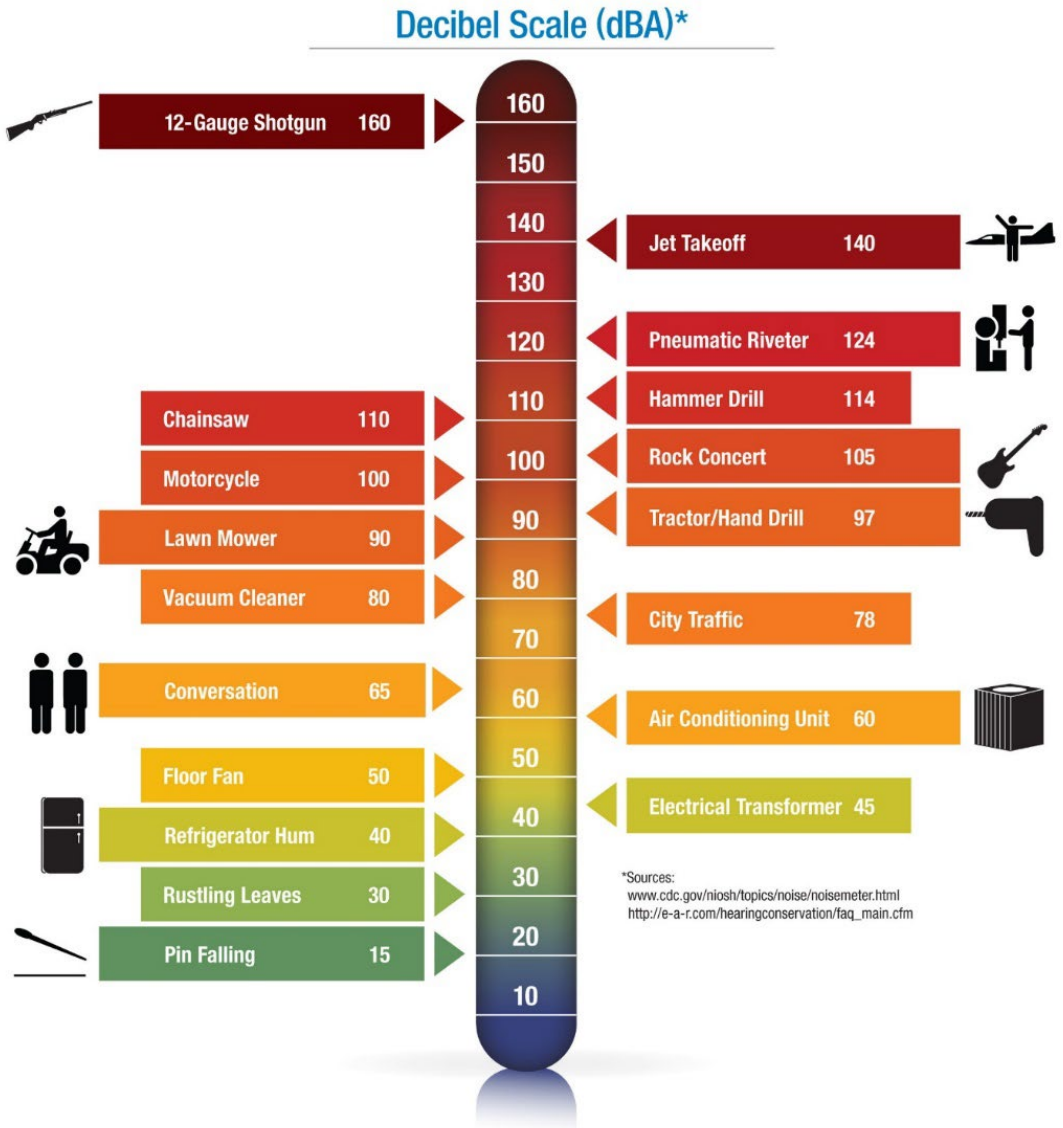
Sacramento, California

Project Site Plan

Figure 2

BOLLARD Acoustical Consultants

Figure 3
Typical A-Weighted Sound Levels of Common Noise Sources



DNL is based upon the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment. DNL-based noise standards are commonly used to assess noise impacts associated with traffic, railroad, and aircraft noise sources.

Criteria for Acceptable Noise Exposure

Sacramento 2035 General Plan

The Environmental Constraints chapter (EC-3) of the Sacramento 2035 General Plan establishes an exterior and interior noise level standards for various land uses. The General Plan policies applicable to the project are included below.

EC 3.1.1 **Exterior Noise Standards.** The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table 1 (General Plan Table EC 1), to the extent feasible.

EC 3.1.3 **Interior Noise Standards.** The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dBA DNL for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dBA L_{eq} (peak hour) for office buildings and similar uses.

EC 3.1.4 **Interior Noise Review for Multiple, Loud Short-Term Events.** In cases where new development is proposed in areas subject to frequent, high-noise events (such as aircraft over-flights, or train and truck passbys), the City shall evaluate substantiated noise impacts on any sensitive receptors from such events when considering whether to approve the development proposal, taking into account potential for sleep disturbance, undue annoyance, and interruption in conversation, to ensure that the proposed development is compatible within the context of its surroundings.

EC 3.1.11 **Alternatives to Sound Walls.** The City shall encourage the use of design strategies and other noise reduction methods along transportation corridors in lieu of sound walls to mitigate noise impacts and enhance aesthetics.

Table 1
Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type	Highest Level of Noise Exposure that is Regarded as "Normally Acceptable"[a] (DNL[b] or CNEL[c])
Residential – Low Density Single Family, Duplex, Mobile Homes	60 dBA[d,e]
Residential – Multi-Family[g]	65 dBA
Urban Residential Infill[h] and Mixed-Use Projects[i,j]	70 dBA
Transient Lodging – Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site – specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site – specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings – Interstate, Commercial, and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

a. As defined in the Guidelines, "Normally Acceptable" means that the "specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements."
b. Ldn or Day Night Average Level is an average 24-hour noise measurement that factors in day and night noise levels.
c. CNEL or Community Noise Equivalent Level measurements are a weighted average of sound levels gathered throughout a 24-hour period.
d. Applies to the primary open space area of a detached single-family home, duplex, or mobile home, which is typically the backyard or fenced side yard, as measured from the center of the primary open space area (not the property line). This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.
e. dBA or A-weighted decibel scale is a measurement of noise levels.
f. The exterior noise standard for the residential area west of McClellan Airport (McClellan Heights/Parker Homes) is 65 dBA.
g. Applies to the primary open space areas of townhomes and multi-family apartments or condominiums (private rear yards for townhomes; common courtyards, roof gardens, or gathering spaces for multi-family developments). These standards shall not apply to balconies or small attached patios in multistoried multi-family structures.
h. With land use designations of Central Interstate District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).
i. All mixed-use projects located anywhere in the City of Sacramento
j. See notes d and g above for definition of primary open space areas for single-family and multi-family developments.

Source: Sacramento 2035 General Plan, Table EC 1

Evaluation of Future Traffic Noise Levels at the Project Site

Traffic Noise Prediction Methodology

The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to predict traffic noise levels at the project site. The FHWA Model is based upon the CALVENO noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions and is considered to be accurate within 1.5 dB in most situations.

Traffic Noise Prediction Model Calibration

To calibrate the FHWA Model to accurately reflect local Rio Linda Boulevard traffic conditions at the project site, BAC conducted short-term noise level measurements and traffic counts on the project site on January 18, 2022. The traffic calibration location is shown on Figure 1. Photographs from the traffic calibration survey are provided in Appendix B.

A Larson Davis Laboratories (LDL) Model LxT precision integrating sound level meter was used for the traffic calibration. The meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

The results of the FHWA Model calibration procedure, which are shown in Appendix C, indicate that the FHWA Model was found to accurately predict Rio Linda Boulevard traffic noise levels at the project site (within 1 dB). As a result, no calibration offset was warranted for the prediction of future Rio Linda Boulevard traffic noise levels at the development.

Predicted Future Exterior Traffic Noise Levels

The FHWA Model was used with future traffic data to predict future traffic noise levels at the project site. The future Average Daily Traffic (ADT) for Rio Linda Boulevard was conservatively estimated by increasing the existing ADT volume by a factor of 50%. The existing (2019) ADT volume for Rio Linda Boulevard was obtained from data published by the Sacramento County Department of Transportation. The day/night distribution and truck percentages were derived from BAC file data for similar roadways. Estimated future traffic speed assumptions were based on posted speed limits and field observations. The FHWA Model inputs and predicted future Rio Linda Boulevard traffic noise levels at the proposed development are presented in Appendix D and are summarized in Table 2.

As stated in footnote d of Table 1, the General Plan's exterior noise level standard is to be applied at primary open space areas of detached single-family homes, such as those proposed by the project. The General Plan defines primary open space areas for single-family detached homes as backyards or side yards and does not apply to secondary open space areas such as front yards, balconies, stoops, or porches. It is the understanding of BAC that the primary open space areas for the proposed residences of the development will be side yards located between residential buildings. The locations of the side yards proposed nearest to Rio Linda Boulevard are illustrated on Figure 2. Based on the proposed site design, the residential side yards located nearest to Rio Linda Boulevard would receive a reduced view of the roadway provided by proposed intervening building envelopes. To account for this screening, predicted Rio Linda Boulevard traffic noise levels at the nearest residential side yards include an offset of -5 dB.

Table 2
Predicted Future Exterior Traffic Noise Levels at the Project Site[1]

Roadway	Receiver Description[2]	Predicted Future Exterior DNL (dB)[3,4]
Rio Linda Boulevard	Nearest Public Park – Lot F	65
	Nearest Primary Open Spaces – Side Yards	60
	Nearest First-Floor Building Facades	67
	Nearest Upper-Floor Building Facades	69

[1] A complete listing of FHWA Model Inputs and results for Rio Linda Boulevard are provided as Appendix D.
[2] The locations of the nearest public park and primary open spaces (side yards) are shown on Figure 2.
[3] Predicted noise level at residential side yards include an offset of -5 dB to account for a reduced view of the roadway that would be provided by proposed intervening buildings (residences).
[4] Predicted noise levels at upper-floor building facades include a +2 dB offset to account for reduced ground absorption of sound at elevation positions.
Source: BAC (2022)

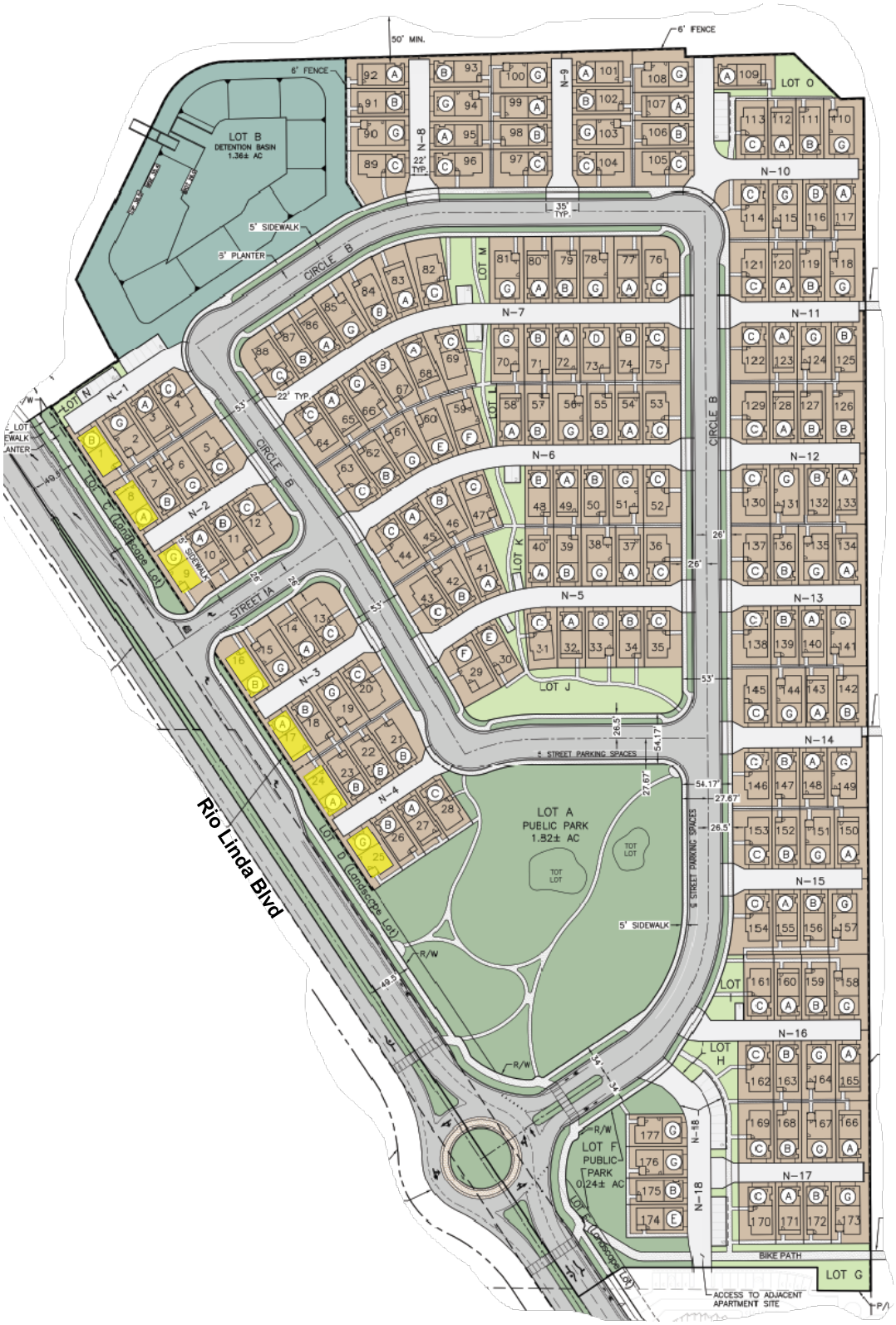
Exterior Noise Compliance Evaluation

As indicated in Table 2, predicted future Rio Linda Boulevard traffic noise level exposure at the nearest proposed public park (Lot F) would satisfy the Sacramento General Plan 70 dB DNL exterior noise level standard applicable to neighborhood parks. The Table 2 data also indicate that future Rio Linda Boulevard traffic noise exposure is predicted to satisfy the General Plan 60 dB DNL exterior noise level standard at the primary open spaces (side yards) of the nearest residences to the roadway. As a result, no further consideration of exterior noise mitigation measures would be warranted for future Rio Linda Boulevard traffic noise at the project site.

Interior Traffic Noise Compliance Evaluation

Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), *typically* results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Therefore, provided future traffic noise levels do not exceed 70 dB DNL at exterior building facades, standard construction practices would be adequate to ensure compliance with the Sacramento General Plan 45 dB DNL interior noise level standard.

As indicated in Table 2, future exterior Rio Linda Boulevard traffic noise level exposure is predicted to be 67 dB DNL at the first-floor building facades of residences constructed nearest to the roadway. Due to reduced ground absorption at elevated positions, future exterior traffic noise levels at the upper-floor facades of those buildings are predicted to approach 69 dB DNL. Based on the above-identified exterior to interior noise reduction typically achieved with standard residential construction, window and door construction upgrades would not be warranted for satisfaction of the General Plan 45 dB DNL interior noise level standard at the project site. However, if a greater margin of safety is desired, the window construction upgrades identified on Figure 4 could be integrated into the project design. Finally, mechanical ventilation (air conditioning) should be provided for all residences within this development to allow the occupants to close doors and windows as desired for additional acoustical isolation.



Legend

Window Assembly Upgrades: STC 32 (All Floors)*

**Recommended STC rating of 32 for greater margin of safety. Applies to all floors of windows from which a view of Rio Linda Boulevard would be present (i.e., north-, west- and south-facing windows).*

N

Scale (Feet)

0 75 150

Robla Estates Subdivision
Sacramento, California

Window Assembly Upgrades

Figure 4

BOLLARD
Acoustical Consultants

Conclusions

The Robla Estates Subdivision is predicted to be exposed to future Rio Linda Boulevard traffic noise levels in compliance with the applicable Sacramento General Plan exterior noise level criteria. In addition, standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof) is expected to be adequate to reduce future Rio Linda Boulevard traffic noise levels within all floors of residences constructed adjacent to the roadway to a state of compliance with the applicable General Plan interior noise level standard for residential uses. However, if a greater margin of safety is desired, the window construction upgrades identified on Figure 4 could be integrated into the project design. Finally, mechanical ventilation (air conditioning) should be provided for all residences within this development to allow the occupants to close doors and windows as desired for additional acoustical isolation.

These conclusions are based on the results from the BAC traffic calibration survey (Appendix C), the FHWA Model traffic inputs and assumptions contained in Appendix D, the proposed site design shown in Figures 2 and 4, and on noise reduction data for standard residential dwellings and for typical STC rated window data. Deviations from the resources cited herein could cause future traffic noise levels to differ from those predicted in this assessment. In addition, Bollard Acoustical Consultants, Inc. is not responsible for degradation in acoustic performance of the residential construction due to poor construction practices, failure to comply with applicable building code requirements, or for failure to adhere to the minimum building practices cited in this report.

This concludes BAC's environmental noise assessment for the Robla Estates Subdivision in Sacramento, California. Please contact BAC at (530) 537-2328 or dariog@bacnoise.com with any questions regarding this assessment.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Legend

A Facing west from traffic calibration measurement site along Rio Linda Boulevard

B Facing north from traffic calibration measurement site along Rio Linda Boulevard

C Facing south from traffic calibration measurement site along Rio Linda Boulevard

Robla Estates Subdivision
Sacramento, California

Traffic Calibration Survey Photographs

Appendix B

BOLLARD
Acoustical Consultants

Appendix C
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Calibration Worksheet

Project Information:	Job Number:	2022-013
	Project Name:	Robla Estates Subdivision
	Roadway Tested:	Rio Linda Boulevard
	Test Location:	On project site
	Test Date:	January 18, 2022
Weather Conditions:	Temperature (Fahrenheit):	59
	Relative Humidity:	60%
	Wind Speed and Direction:	Calm
	Cloud Cover:	Partly Cloudy
Sound Level Meter:	Sound Level Meter:	LDL Model LXT (BAC #2)
	Calibrator:	LDL Model CAL200
	Meter Calibrated:	Immediately before
	Meter Settings:	A-weighted, slow response
Microphone:	Microphone Location:	On project site
	Distance to Centerline (feet):	70
	Microphone Height:	5 feet above ground
	Intervening Ground (Hard or Soft):	**Soft**
	Elevation Relative to Road (feet):	0
Roadway Condition:	Pavement Type	Asphalt
	Pavement Condition:	Good
	Number of Lanes:	2
	Posted Maximum Speed (mph):	45
Test Parameters:	Test Time:	4:10 PM
	Test Duration (minutes):	15
	Observed Number Automobiles:	304
	Observed Number Medium Trucks:	2
	Observed Number Heavy Trucks:	4
	Observed Average Speed (mph):	55
Model Calibration:	Measured Average Level (L_{eq}):	69.0
	Level Predicted by FHWA Model, L_{eq} (dB):	68.2
	Difference (dB):	***-0.8***

Conclusions: The FHWA Model was found to predict existing Rio Linda Boulevard traffic noise levels at the project site within 1 dB. As a result, no calibration offset was applied to the FHWA Model for the prediction of future Rio Linda Boulevard traffic noise levels at the project site.

BOLLARD
Acoustical Consultants

Appendix D
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2022-013
Project Name: Robla Estates Subdivision
Roadway Name: Rio Linda Boulevard

Traffic Data:

Year: Future
Average Daily Traffic Volume: 19,232
Percent Daytime Traffic: 87
Percent Nighttime Traffic: 13
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 1
Assumed Vehicle Speed (mph): 45
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				---------- DNL (dB) ----------			
Location	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
1	Nearest Public Park - Lot F	100		64	54	55	65
2	Nearest Primary Open Space Areas - Side Yards	95	-5	59	49	50	60
3	Nearest First-Floor Building Facades	70		66	56	57	67
4	Nearest Upper-Floor Building Facades	70	2	68	58	59	69

Traffic Noise Contours (No Calibration Offset):

DNL Contour (dB)	Distance from Centerline (ft)
75	21
70	45
65	96
60	207

Notes:
1. Future ADT was conservatively estimated by increasing the existing (2019) ADT volume of Rio Linda Boulevard adjacent to the site by 50% for future increases. Existing traffic data obtained from the Sacramento County of Transportation (12,821 ADT - Rio Linda Boulevard: South of Marysville Boulevard).
2. Predicted future traffic noise levels at nearest primary open space areas (side yards) include a -5 dB offset to account for a reduced view of the roadway resulting from the construction of intervening buildings (residences).
3. Predicted future traffic noise levels nearest upper-floor building facades include an offset of +2 dB to account for reduced absorption of sound at elevated positions.

BOLLARD
Acoustical Consultants

APPENDIX K
VMT ANALYSIS

ROBLA ESTATES TRAFFIC STUDY MEMO

DATE: March 24, 2022

TO: Matthew Ilagan, Pelle Clarke | City of Sacramento

FROM: Brian Kellogg, Vic Maslanka | DKS Associates

SUBJECT: Robla Estates Traffic Study Project #19179-016

DRAFT

INTRODUCTION

The planned Robla Estates site ("Project") is expected to include 177 residential homes and a public park, to be located on the northeast side of Rio Linda Boulevard in the Robla area of the City of Sacramento. This memorandum details the traffic volumes forecasted for each scenario studied and examines the traffic operations, circulation, queuing, and safety effects resulting from a set of proposed intersection types for the future Project site driveway. For this forecasting and analysis effort, the following was included for study intersections and analysis scenarios:

Study Intersections:

- Rio Linda Boulevard & Project Site Main Driveway
- Rio Linda Boulevard & Project Site North Driveway

Scenarios:

- 2022 Existing (including traffic counts only)
- 2022 Existing + Project (including traffic counts and trips generated by the Project site)
- 2040 Cumulative (incl. grown traffic counts, background site trips and Project site trips)

For volume forecasting, this memo includes an overview of the traffic counting effort done for the project, the background site and trips considered, and the process for estimating background traffic growth and the trips generated by the project site. A signal warrant analysis was done for the intersection of Rio Linda Boulevard and the main Project site driveway and is documented in this memo. The traffic operations and safety analyses observed delays and queues for vehicles and an evaluation of conflict points and pedestrian/bicycle treatments related to the intersection treatments analyzed.

PLANNED TRANSPORTATION IMPROVEMENTS

As part of the Project site build-out, Rio Linda Boulevard is expected to be widened to two lanes going northbound through the site area and tapering back to one lane per direction to the north of the site's north driveway; southbound Rio Linda would remain one-lane. The intersection of Rio Linda Boulevard with the main (south) site driveway is desired as a roundabout, built with two lanes continuing north, one lane southbound, and connecting as a two-lane roadway to the site. The northern site entrance is expected to be a stop-controlled right-in/right-out driveway, right a turn bay provided to enter the site.

For the Cumulative 2040 scenario, a background site – called Leisure Vistas – is expected to add a fourth leg to the roundabout on its west side. Rio Linda Boulevard is also expected to add a lane southbound through the study area to become a four-lane roadway; the roundabout would likewise add a southbound lane for a true 2+1 configuration.

The site plan for the interim Project build-out (assumed 2022) is shown in Figure 1, with larger size plans and the full 2040 Cumulative build-out provided in Appendix A.

DRAFT

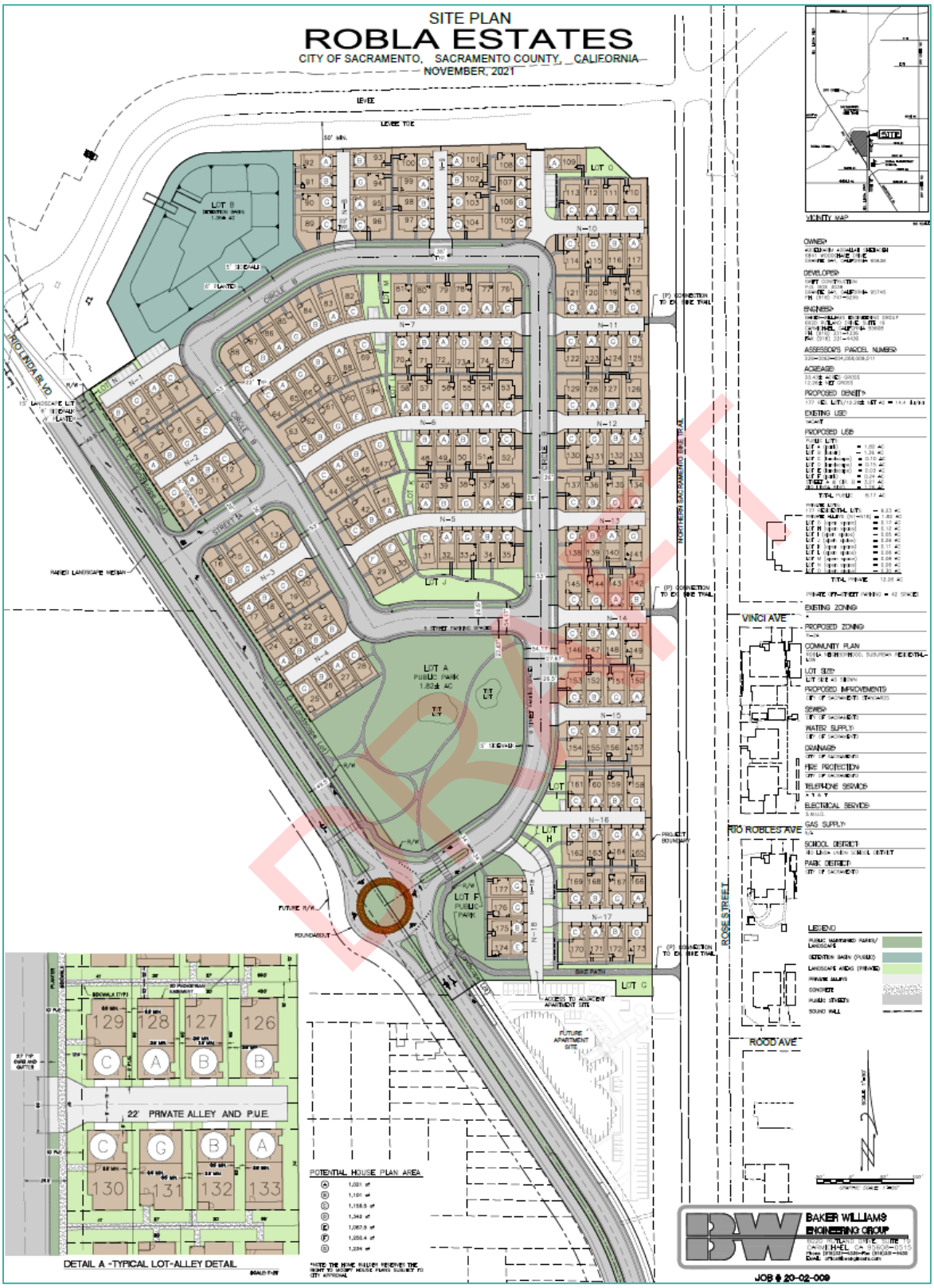


FIGURE 1. PROJECT SITE PLAN (AT BUILD-YEAR)

TRAFFIC COUNTS AND BACKGROUND GROWTH

EXISTING TRAFFIC VOLUMES

Tube counts were collected along Rio Linda Boulevard to the north of Marysville Boulevard. These counts were taken over the entire week of January 22, 2022 and were aggregated in 15-minute increments. The AM peak hour (7:00-8:00 AM) and PM peak hour (4:30-5:30 PM) volumes, averaged over those weekdays (Mon-Fri), are shown in Figure 2. The full traffic volume and speed data are provided in Appendix B.

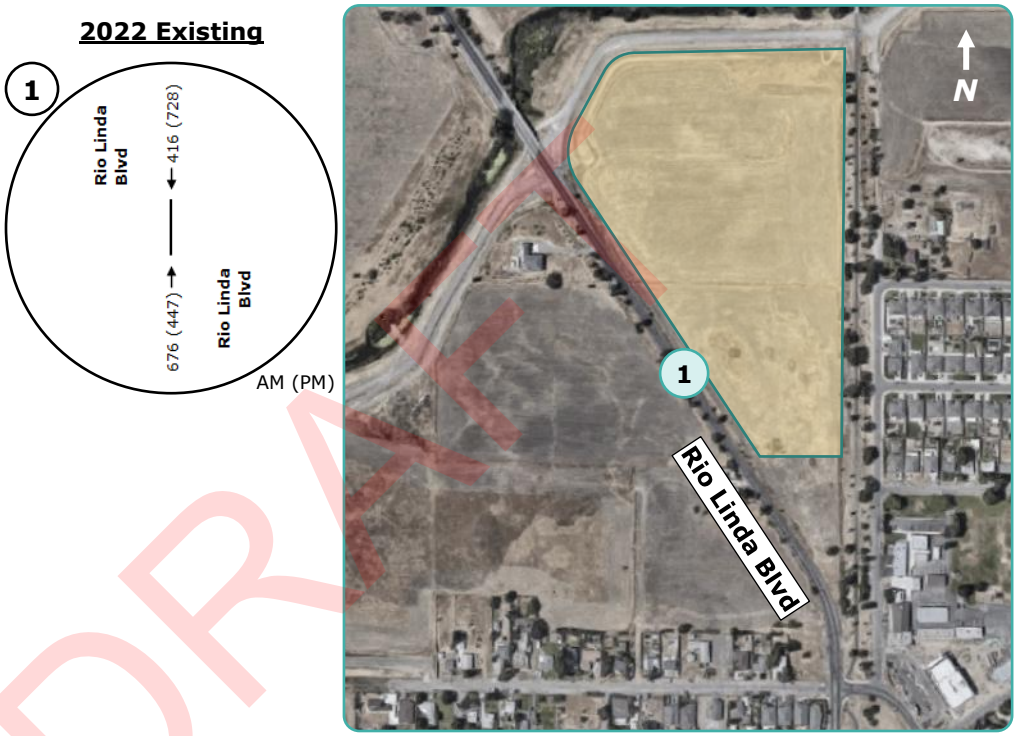


FIGURE 2. EXISTING TRAFFIC VOLUMES

A summary of the speed data collected along Rio Linda Boulevard is shown in Table 1. Both directions had an 85th-percentile speed over the posted speed limit of 45 mph. Southbound Rio Linda Boulevard showed lower speeds overall, likely due to the upcoming curve and signal at Claire Avenue/Marysville Boulevard.

TABLE 1. RIO LINDA SPEED SUMMARY

RIO LINDA DIRECTION	MEDIAN SPEED	85TH PERCENTILE SPEED	% OVER 45 MPH
NORTHBOUND	48 mph	56 mph	67%
SOUTHBOUND	42 mph	47 mph	26%

DRAFT

BACKGROUND TRAFFIC GROWTH

To estimate future background growth, the SACSIM travel demand model was used. The model was run for a Baseline 2016 scenario and a Cumulative 2040 scenario. Looking at the AM and PM peak hour volume projections along Rio Linda Boulevard near the Project site, growth rates in each direction ranged from 0.3%/year to 2.1%/year. For this study, an assumed growth rate of **1%/year** was applied to the collected traffic counts as part of the 2040 Cumulative scenario.

In addition to growing collected traffic counts, the 2040 Cumulative scenario includes the Leisure Vistas site, located adjacent to the Project site and on the southwest side of Rio Linda Boulevard. This background site would include 915 residential units (senior living) and a 43k square-foot neighborhood shopping center. For analysis purposes, it is assumed that roadways interior to the site would connect to Rio Linda Boulevard at the same location as the Project site's main entrance, as well as to Claire Avenue to the south and Sully Street to the southwest. Trips forecasted for this site were included in a previous traffic study for this site; this traffic study is included in Appendix C. Note that trips generated by this background site were not grown alongside the collected traffic counts.

TRIPS GENERATED BY SITE

TRIP GENERATION

Trip generation estimates for the Robla Estates site were made based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Trip figures were estimated for the AM and PM commuter peaks based on adjacent roadway traffic. A summary of the AM and PM peak site trips is shown in Table 2; detailed trip generation reports can be found in Appendix D. While it can be presumed that much of the traffic to/from the park site would come from the surrounding homes, no specific figures for this internal site capture are available. Therefore, to make a conservative analysis, park trips were considered similarly to residential housing trips and distributed external to the site area.

TABLE 2. ROBLA ESTATES TRIP GENERATION SUMMARY

ITE TRIP GEN CLASSIFICATION			AM PEAK TRIPS (ADJ. STREET TRAFFIC)			PM PEAK TRIPS (ADJ. STREET TRAFFIC)		
#	DESCRIPTION	# OF UNITS	IN	OUT	TOTAL	IN	OUT	TOTAL
210	Single-Family Detached Housing	177 dwelling units	32	92	124	107	63	170
411	Public Park	1.82 acres	0	0	0[a]	13	10	23
TOTAL SITE			**32**	**92**	**124**	**120**	**73**	**193**

[a] Small sample size. Fitted curve equation not given.

DRAFT

TRIP DISTRIBUTION AND ROUTING

Trip distribution and route choice for the site was estimated based on the SACSIM travel demand model, as well as traffic counts collected along Rio Linda Boulevard in the vicinity of the proposed site. For the year 2040 Cumulative Conditions, a site on the west side of Rio Linda Boulevard and a fourth leg to the Project site's main driveway are expected. While the site is not expected to facilitate trips between Rio Linda Boulevard and Claire Avenue/Sully Street, the presence of a neighborhood grocery store would likely attract trips from the proposed Project site. Therefore, a nominal 5% distribution was included for site trips.

The inbound and outbound trip distribution for the Project site is shown in Figure 3 for both the year 2022 Existing + Project and 2040 Cumulative scenarios. Figure 4 shows the AM and PM peak volumes generated by the Project site.

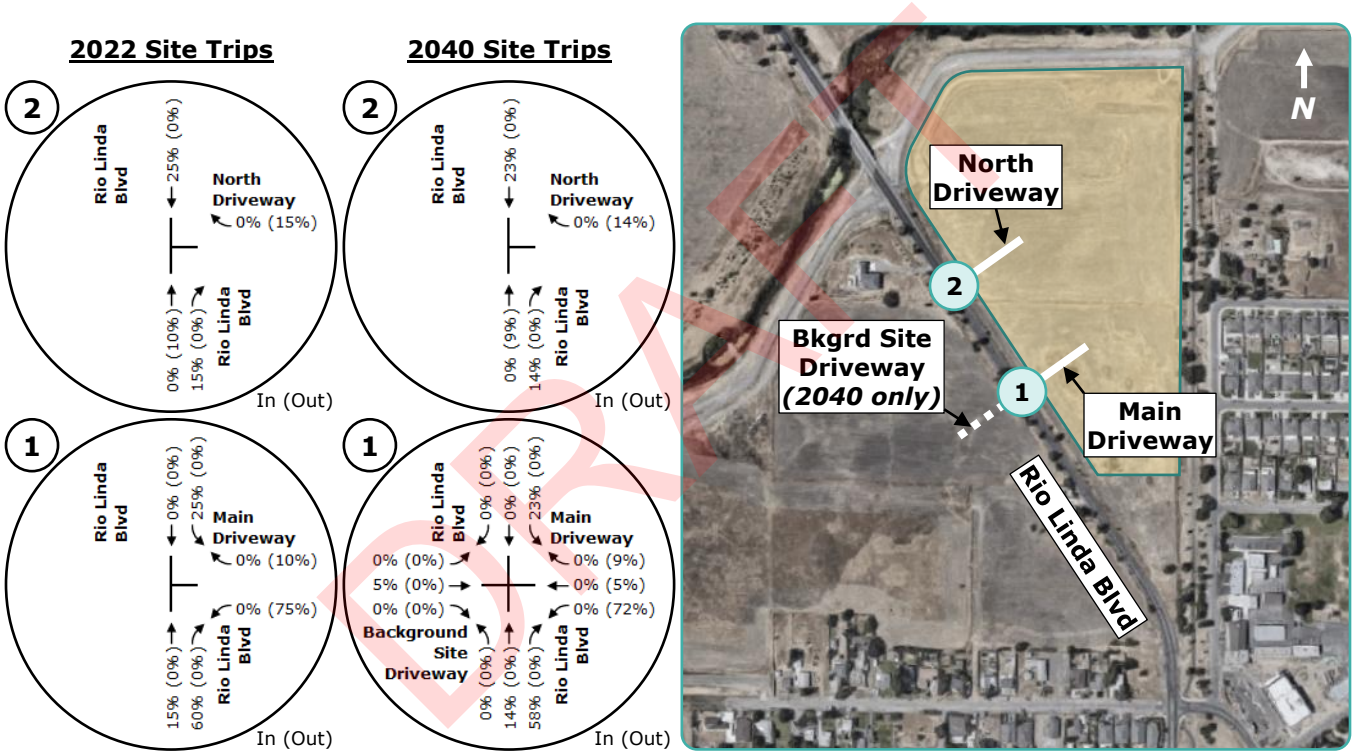


FIGURE 3. PROJECT SITE TRIP DISTRIBUTION

PROJECTED TRAFFIC VOLUMES

Figure 5 shows the total forecasted traffic volumes for both study intersections, over the 2022 Existing+Project scenario and the 2040 Cumulative scenario. These volumes include projected background traffic based on counts and the SACSIM model, the background Leisure Vistas site to the southwest of the Project site, and the projected Project site volumes. The 2040 Cumulative scenario assumes the build-out of a fourth leg to the intersection of Rio Linda Boulevard and the Project site's main driveway.

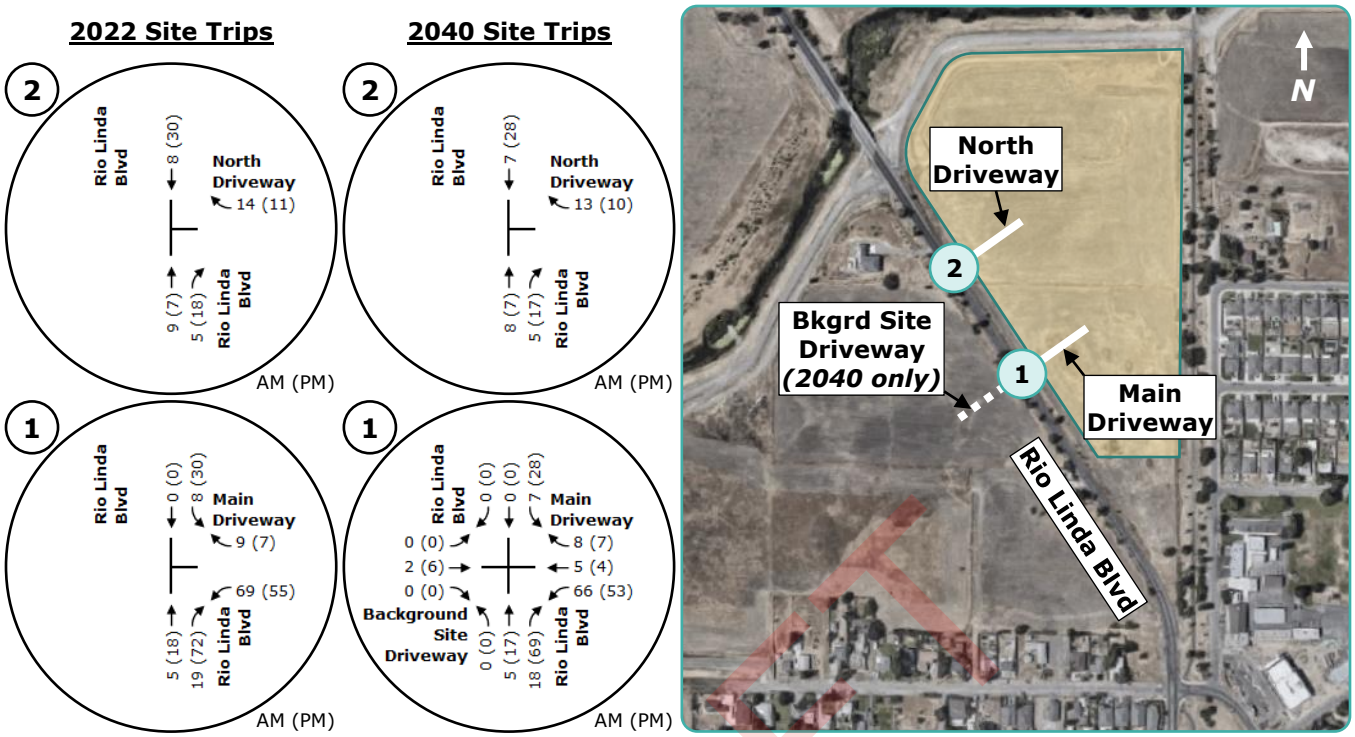


FIGURE 4. PROJECT TRAFFIC VOLUMES

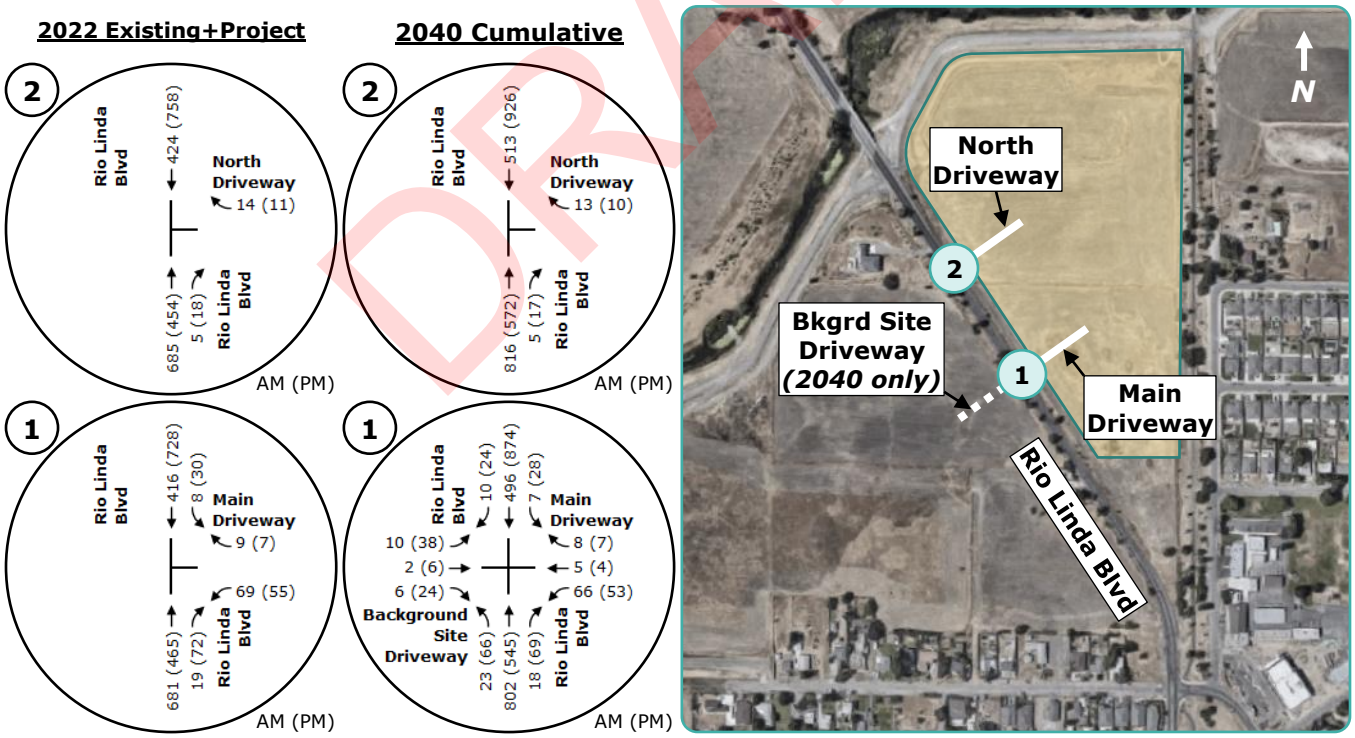


FIGURE 5. FULL PROJECT + BACKGROUND TRAFFIC VOLUMES

DRAFT

REGULATORY SETTING

CITY OF SACRAMENTO

The Mobility Element of the Sacramento 2035 General Plan outlines goals and policies that coordinate the transportation and circulation system with planned land uses. The following Level of Service (LOS) policy has been used in this study, as amended on January 23, 2018:

> ***Policy M 1.2.2 Level of Service (LOS) Standard.*** *The City shall implement a flexible context sensitive Level of Service (LOS) standard, and will measure traffic operations against the vehicle LOS thresholds established in this policy. The City will measure Vehicle LOS based on the methodology contained in the latest version of the Highway Capacity Manual (HCM) published by the Transportation Research Board. The City's specific vehicle LOS thresholds have been defined based on community values with respect to modal priorities, land use context, economic development, and environmental resources and constraints. As such, the City has established variable LOS threshold appropriate for the unique characteristics of the City's diverse neighborhoods and communities. The City will strive to operate the roadway network at LOS D or better for vehicles during typical weekday conditions, including AM and PM peak hour with…exceptions…*

In accordance with City policies, the applicable operating standard for the study area intersections is **LOS D**.

CEQA GUIDELINES (THRESHOLDS OF SIGNIFICANCE)

Consistent with Appendix G of the CEQA Guidelines, thresholds of significance adopted by the governing jurisdictions in applicable general plans and previous environmental documents, and professional judgement, a significant impact would occur if the proposed project would result in the effects described below:

INTERSECTIONS – CITY OF SACRAMENTO

- The traffic generated by the project degrades LOS from an acceptable LOS (without the project) to an unacceptable LOS (with the project),
- The LOS (without project) is unacceptable and project generated traffic increases the average vehicle delay by 5 seconds or more.
- Intersections - LOS A-D is always to be maintained; provided, LOS E or F may be acceptable if improvements are made to the overall transportation system and/or non-vehicular transportation and transit are promoted as part of the project or a City initiated project.

TRANSIT

- Adversely affect public transit operations,
- Fail to adequately provide access to transit.

BICYCLE FACILITIES

- Adversely affect existing or planned bicycle facilities,
- Fail to adequately provide for access by bicycle.

DRAFT

PEDESTRIAN CIRCULATION

- Adversely affect existing or planned pedestrian facilities,
- Fail to adequately provide for access by pedestrians.

CONSTRUCTION-RELATED TRAFFIC IMPACTS

- Degrade an intersection or roadway to an unacceptable level,
- Cause inconveniences to motorists due to prolonged road closures, or
- Result in increased frequency of potential conflicts between vehicles, pedestrians, and bicyclists.

TRAFFIC SIGNAL WARRANTS

A traffic signal warrant analysis was done for the main site driveway planned for the Robla Estates development along Rio Linda Boulevard, per the methodology described in the California Department of Transportation Manual on Uniform Traffic Control Devices (CaMUTCD). For the proposed future intersection, the warrant study was based on volumes projected in the 2040 Cumulative scenario. For this study, the following warrants were analyzed:

- Warrant 1: Eight-Hour Vehicular Volume (**not met**)
- Warrant 2: Four-Hour Vehicular Volume (**meets warrant**)
- Warrant 3: Peak Hour Vehicular Volume (**meets warrant**)

For all vehicular volume warrants, volume thresholds are defined differently for urban and rural areas. The intersection is defined as "rural" if the speed limit or critical speed on the major street is over 40 mph or if it is in an isolated community of fewer than 10,000 people. Because the speed limit of Rio Linda Boulevard is 45 mph through the Project area, this intersection is considered "rural" for purposes of this signal warrant analysis.

Calculations for the signal warrants analyzed are shown in Appendix E.

WARRANT 1: EIGHT-HOUR VEHICULAR VOLUME

The eight-hour vehicular volume warrant analyzes volumes over 8 hours of an average day and has two conditions, either of which may be satisfied to meet the warrant (or if both are met at 80% thresholds):

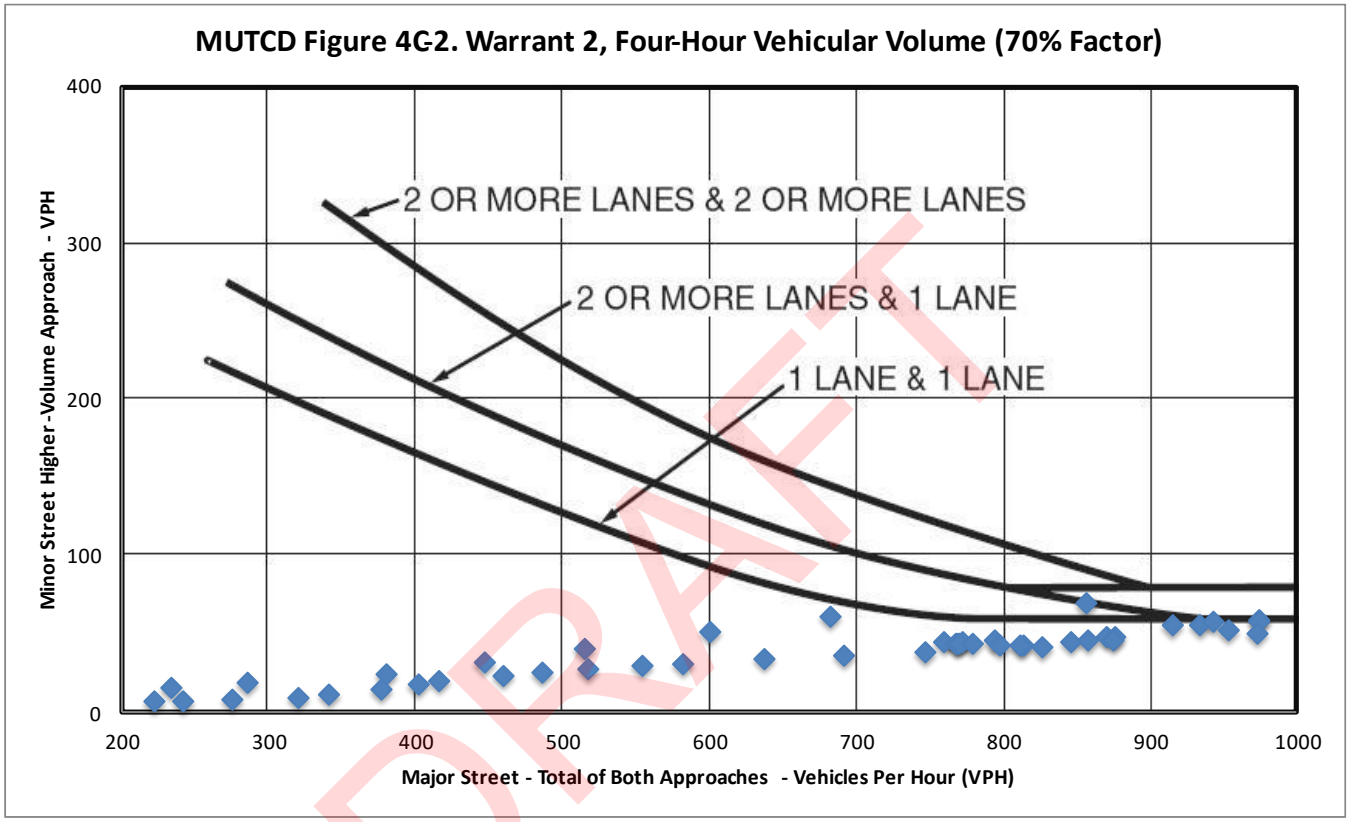
- Condition A, the Minimum Vehicular Volume, is intended for application at locations with a large volume of intersecting traffic, and
- Condition B, the Interruption of Continuous Traffic, is intended where traffic volume on the major street is heavy to where minor street traffic suffers excessive delay

Based on the eight-hour threshold requirements, warrants are **not met** for the 2040 Cumulative scenario.

DRAFT

WARRANT 2: FOUR-HOUR VEHICULAR VOLUME

The four-hour vehicular volume warrant analyzes volumes over any 4 hours of an average day and is intended where the volume of intersecting traffic is the main reason for installing a traffic signal. The warrant is based on volume thresholds for major- and minor-street traffic. Based on expected volumes in the 2040 Cumulative scenario, the four-hour vehicular volume **warrant is met** for the main site driveway intersection.



Note: Major street volumes greater than 1000vph are not plotted here. See Appendix E for more info.

FIGURE 6. CAMUTCD WARRANT 2 RESULTS (70% FACTOR APPLIED)

WARRANT 3: PEAK HOUR VEHICULAR VOLUME

The peak hour vehicular volume warrant is intended for conditions where minor-street traffic suffers high delay when entering or crossing the major street. It is intended to be applied in cases where a site discharges a large number of vehicles over a short time. For the expected major- and minor-street volumes at Rio Linda Boulevard and the main site driveway, **this warrant is met** for the AM peak hour.

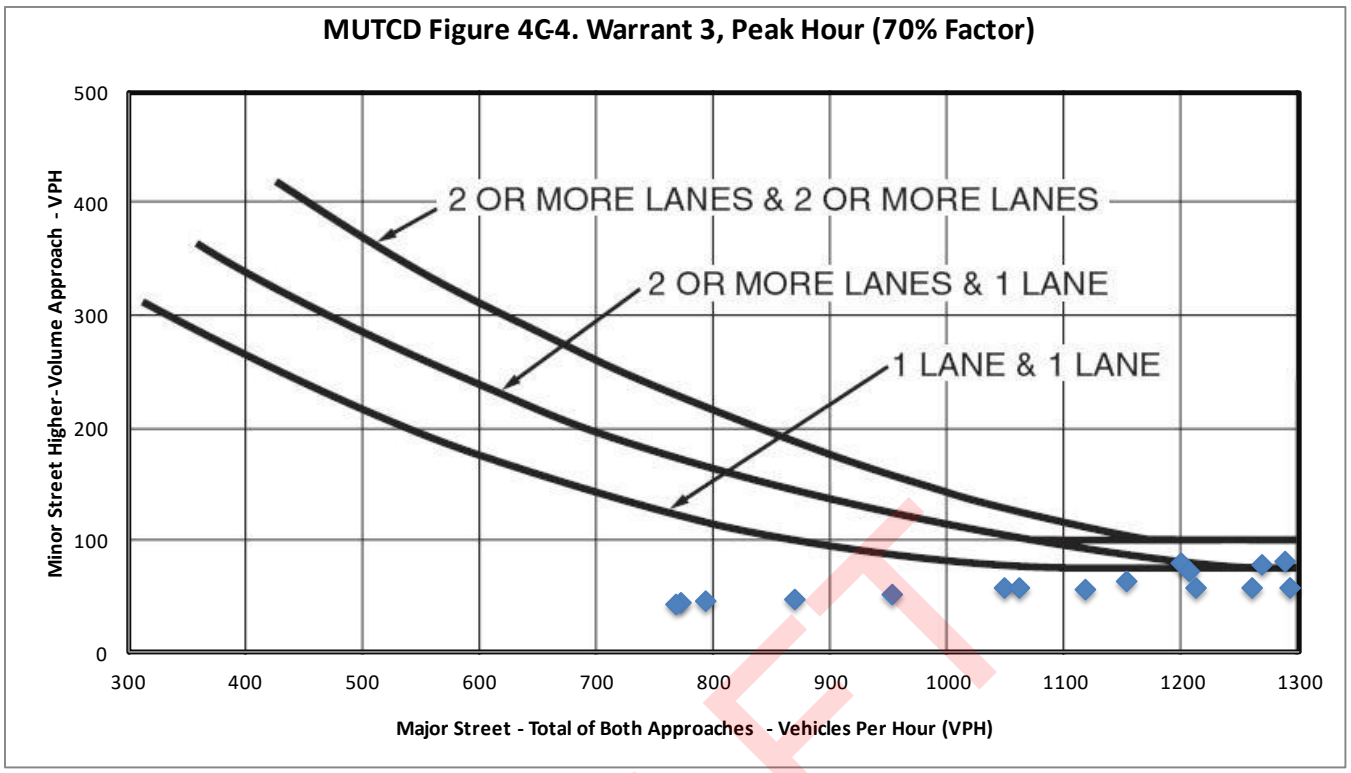


FIGURE 7. CAMUTCD WARRANT 3 RESULTS (70% FACTOR APPLIED)

ROADWAY DESIGN CONSIDERATIONS

This section documents the additional design considerations and analysis assumptions for each intersection alternative at the Project site's main driveway and taper lengths for the lane add/drop locations along Rio Linda Boulevard in the study area, based on City of Sacramento and Caltrans standards.

ROUNDABOUT

At its ultimate build-out (in the 2040 Cumulative scenario), the roundabout planned for the intersection of Rio Linda Boulevard and the Project's main driveway will include two circulating lanes along the Rio Linda Boulevard approaches and one circulating lane along the two site driveways. Cyclists traveling along Rio Linda Boulevard will exit the bike lanes and use a widened sidewalk to cross the roundabout at approach crosswalks with pedestrians.

Prior to construction of the roundabout, a Roundabout Design Concept Report must be submitted to the City for review, per Section 15.11 of the City of Sacramento Design and Procedures Manual. This traffic analysis memo does not include detailed design characteristics of the roundabout, including entry/exit radius or a fastest path analysis.

DRAFT

SIGNALIZATION/STOP CONTROL

With a widening of Rio Linda Boulevard from two to four lanes expected in the study area, the future intersection with the Project site's main driveway (and the Leisure Vistas driveway for the future 2040 Cumulative scenario) must follow standards for expanded intersections, per Section 15.7.6 of the City of Sacramento Design and Procedures Manual. Based on this guidance, the following was included along Rio Linda Boulevard in the traffic analysis:

- Left-turn pocket of **200 feet** into both site driveways
- Right-turn pocket of **150 feet** into both site driveways
- Dual left-turn lanes were not required at either Rio Linda Boulevard approach, as future volumes do not reach the 300 vph threshold

Based on the traffic operations analysis done in this study, projected queue lengths for left- and right-turning vehicles off of Rio Linda Boulevard would not require longer turn pockets than indicated in the design standards.

RIO LINDA BOULEVARD LANE TAPERS

Rio Linda Boulevard is currently a two-lane roadway and is expected to remain so to the north and south of the Project study area. Guidance for taper lengths at lane additions/reductions comes from the Caltrans Highway Design Manual[1] (Topic 206):

- For lane **additions**, the minimum recommended distance to transition traffic to the additional width is **250 feet** per lane.
- For lane **reductions**, the recommended taper distance is calculated as W*V, where W equals the width of the lane to be dropped and V equals the design speed. For a planned 11-foot outer lane and 45 mph design speed, this recommended taper distance is **495 feet**.

DRAFT

TRAFFIC OPERATIONS ANALYSIS

METHODOLOGY

The two proposed intersections along Rio Linda Boulevard were modeled for the 2022 Existing Plus Project and the 2040 Cumulative Scenarios; as there are no existing intersections along Rio Linda Boulevard in the study area, no existing scenario was analyzed.

For stop-controlled and signalized intersections, *Synchro, v11* software was used to compute delay and queues using methodology from the Highway Capacity Manual (HCM), 6th Edition. Roundabout operations were modeled using *Sidra, v8* software. Level of service thresholds were based on movement delay as specified in the HCM; those thresholds are shown in Table 3.

[1] As of this memo, the latest update to the manual is July 1, 2020

The output Synchro and Sidra reports generated for this traffic operations analysis are included in Appendix F.

TABLE 3. INTERSECTION LEVEL OF SERVICE DELAY THRESHOLDS

LEVEL OF SERVICE (LOS)	TOTAL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED	UNSIGNALIZED
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Source: Highway Capacity Manual 6th Edition, Transportation Research Board.

2022 EXISTING PLUS PROJECT RESULTS

The delay and level of service results for the 2022 Existing Plus Project scenario are shown in Table 4 for the AM and PM peak hours. With stop control, the main site driveway would face high delay in leaving the Project site, although relative low volumes would mean that queue lengths would not be significant. Both the signalized and roundabout options at this intersection would perform with favorable operations; none of the movements at the roundabout would be expected to near capacity.

DRAFT

TABLE 4. EXISTING PLUS PROJECT TRAFFIC OPERATIONS RESULTS SUMMARY

INTERSECTION	MVMT	DELAY (S/VEH) & LEVEL OF SERVICE					
		AM PEAK			PM PEAK		
		STOP-CONTROL[a]	SIGNAL	ROUND-ABOUT[b]	STOP-CONTROL[a]	SIGNAL	ROUND-ABOUT[b]
RIO LINDA BLVD & MAIN SITE DRWY	NBT	-	4 (A)	6 (A)	-	3 (A)	6 (A)
	NBR	-	4 (A)	5 (A)	-	3 (A)	5 (A)
	SBL	9 (A)	4 (A)	11 (B)	9 (A)	3 (A)	11 (B)
	SBT	-	5 (A)	6 (A)	-	6 (A)	6 (A)
	WBL	**41 (E)**	19 (B)	9 (A)	**48 (E)**	25 (C)	7 (A)
	WBR	**41 (E)**	19 (B)	5 (A)	**48 (E)**	25 (C)	3 (A)
	Total	-	5 (A)	6 (A)	-	5 (A)	6 (A)
RIO LINDA BLVD & NORTH SITE DRWY	WBR	11 (B)	-	-	10 (A)	-	-

[a] Delay for side-street stop control is not calculated for free-flowing movements or for the total intersection
[b] Includes geometric delay as well as control delay

2040 CUMULATIVE RESULTS

Traffic operations results for the 2040 Cumulative scenario – including the project site, grown background traffic and the future Leisure Vistas site to the west of the Project – are shown in Table 5 for each intersection control tested for the AM and PM peak hours. While stop-control remains an adequate option for the right-in/right-out north driveway intersection, stop-control results in severe delays for vehicles exiting either the Project site or the Leisure Vistas site onto Rio Linda Boulevard. Delay and capacity for both signalization and the roundabout at the main site driveway were acceptable for both peak hours; additional treatments, such as turn bays and/or protected phasing for left turns do not appear to be needed to improve traffic operations.

DRAFT

TABLE 5. 2040 CUMULATIVE TRAFFIC OPERATIONS RESULTS SUMMARY

INTERSECTION	MVMT	DELAY (S/VEH) & LEVEL OF SERVICE					
		AM PEAK			PM PEAK		
		STOP-CONTROL[a]	SIGNAL	ROUND-ABOUT[b]	STOP-CONTROL[a]	SIGNAL	ROUND-ABOUT[b]
RIO LINDA BLVD & MAIN SITE DRWY / LEISURE VISTAS DRWY	NBL	9 (A)	4 (A)	9 (A)	11 (B)	6 (A)	10 (A)
	NBT	-	5 (A)	6 (A)	-	4 (A)	6 (A)
	NBR	-	5 (A)	5 (A)	-	4 (A)	6 (A)
	SBL	10 (A)	5 (A)	11 (B)	9 (A)	4 (A)	11 (B)
	SBT	-	4 (A)	6 (A)	-	5 (A)	6 (A)
	SBR	-	4 (A)	5 (A)	-	5 (A)	5 (A)
	EBL	27 (D)	14 (B)	12 (B)	**100 (F)**	17 (B)	14 (B)
	EBT	27 (D)	14 (B)	7 (A)	**100 (F)**	17 (B)	9 (A)
	EBR	27 (D)	14 (B)	6 (A)	**100 (F)**	17 (B)	9 (A)
	WBL	**76 (F)**	15 (B)	9 (A)	**103 (F)**	17 (B)	8 (A)
	WBT	**76 (F)**	15 (B)	9 (A)	**103 (F)**	17 (B)	7 (A)
	WBR	**76 (F)**	15 (B)	6 (A)	**103 (F)**	17 (B)	4 (A)
	Total	-	5 (A)	6 (A)	-	5 (A)	7 (A)
RIO LINDA BLVD & NORTH SITE DRWY	WBR	12 (B)	-	-	10 (B)	-	-

[a] Delay for side-street stop control is not calculated for free-flowing movements or for the total intersection
[b] Includes geometric delay as well as control delay

DRAFT

INTERSECTION SAFETY

This study does not include a crash analysis and did not include collection of crash data along Rio Linda Boulevard. Rather, this section focuses on the differences in driver and active transportation safety between the stop-controlled, signalized, and roundabout options for the main site driveway intersection with Rio Linda Boulevard. As noted in the Project site plan (Appendix A and Figure 1), the desired treatment along Rio Linda Boulevard includes a northbound separated bike lane, a roundabout at the main site driveway (with cyclists directed to the sidewalk through the circulating roadway), and a right-in/right-out stop at the site's north driveway.

For the signalized and stop-controlled options, vehicles turning left into either the Project site or Leisure Vistas from Rio Linda Boulevard would cross free-flowing opposing traffic; following City standards for expanded intersection design, left- and right-turn bays would be included along Rio Linda Boulevard. For the stop-controlled option, vehicles exiting either site would cross oncoming traffic; with the noted high delay for the 2040 Cumulative scenario (see Table 5), those drivers may risk angle crashes as they become impatient and take smaller gaps to exit either site.

A roundabout has the benefits of naturally slowing down all vehicles approaching the intersection. With fewer – as well as lower speed – conflict points than a traditional intersection, roundabouts

typically exhibit lower rates of severe as well as angle crashes. From the operations analysis, having a 2+1 configuration roundabout at the site's main entrance would provide low delay for all movements for expected volume growth in the 2040 Cumulative scenario. To accommodate safe crossings for peds and cyclists, use of Rectangular Rapid-Flashing Beacons (RRFBs), as well as advance warning signs along Rio Linda Boulevard, would be recommended.

CONCLUSION

This memo documented the traffic analysis for the proposed Robla Estates site along Rio Linda Boulevard and included a forecast of background traffic along Rio Linda and the effect of the background Leisure Vistas site on the proposed intersection at the Project site's south entrance. Based on peak hour volume projections, either a signalized or roundabout alternative at the site's south entrance would accommodate demand at acceptable delay/capacity levels. The roundabout option would provide additional safety benefits, especially for left-turning traffic, by slowing down approaching vehicles and reducing conflict points at the intersection; the roundabout would also not require additional turn bays or slip lanes to safety accommodate vehicles turning off of Rio Linda Boulevard. Use of control devices such as RRFBs at each crosswalk and warning signs along Rio Linda Boulevard are recommended to increase driver awareness of crossing cyclists and pedestrians.

DRAFT

APPENDIX A: SITE PLANS

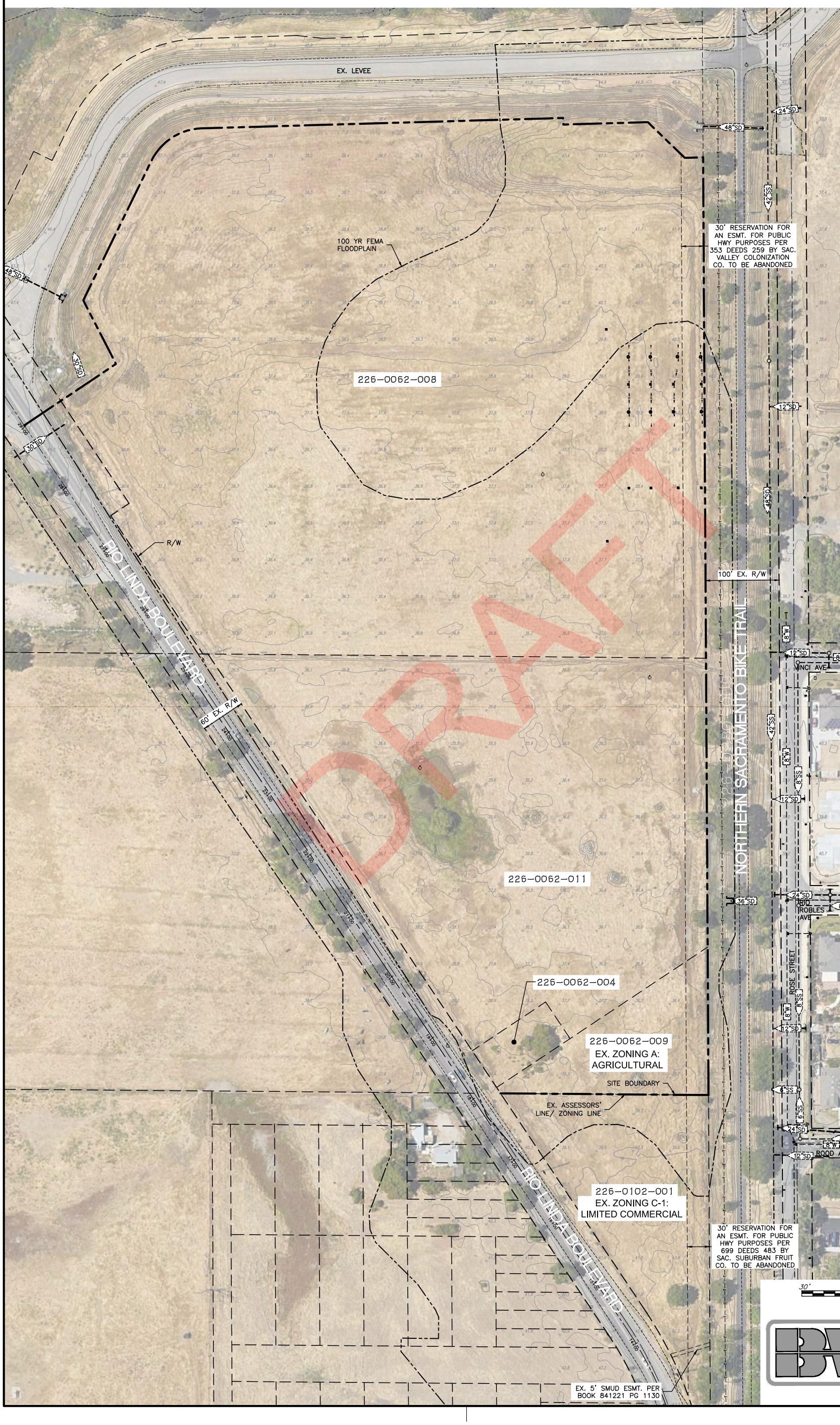
DRAFT

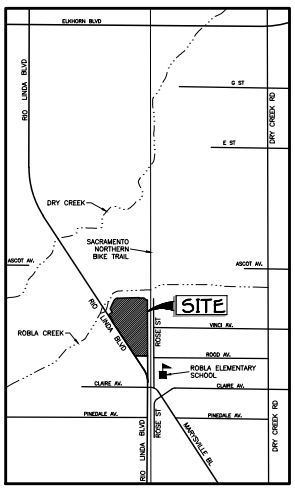
EXISTING CONDITIONS EXHIBIT

5330 RIO LINDA BOULEVARD

CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA

MARCH, 2021





VICINITY MAP

NO SCALE

LEGEND:

- EXISTING SEWER — 8" SS
- EXISTING STORM DRAIN — 12" SD
- EXISTING WATER LINE — 8" W
- CONTOUR — 45 / 38.2
- SPOT ELEVATION
- SITE BOUNDARY
- 100 YR FEMA FLOODPLAIN

OWNER:
SHEHADEH FAMILY REAL PROP. HOLDING TRUST
6841 WOODCHASE DRIVE
GRANITE BAY, CALIFORNIA 95838

DEVELOPER:
SWIFT CONSTRUCTION
P.O. BOX 3038
GRANITE BAY, CALIFORNIA 95746
PH. (916) 747-5255

ENGINEER:
BAKER-WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CALIFORNIA 95608
PH. (916) 331-4336
FAX (916) 331-4430

ASSESSOR'S PARCEL NUMBER:
226-0062-004,008,009,011

ACREAGE:
20.55± ACRES GROSS

EXISTING USE:
VACANT

PROPOSED USE:
178 SINGLE FAMILY RESIDENCES
LOTS A AND F PUBLIC PARK/OPEN SPACE
LOT B DETENTION BASIN (PUBLIC)
LOTS C THRU E PUBLIC LANDSCAPE LOTS
LOTS G THRU M PRIVATE OPEN SPACE
LOTS N-1 THRU N-17 PRIVATE ALLEYS

EXISTING ZONING:
A

PROPOSED ZONING:
R-2A

COMMUNITY PLAN:
ROBLA NEIGHBORHOOD, SUBURBAN RESIDENTIAL-LOW

LOT SIZE:
LOT SIZE AS SHOWN

PROPOSED IMPROVEMENTS:
CITY OF SACRAMENTO STANDARDS

SEWER:
CITY OF SACRAMENTO

WATER SUPPLY:
CITY OF SACRAMENTO

DRAINAGE:
CITY OF SACRAMENTO

FIRE PROTECTION:
CITY OF SACRAMENTO

TELEPHONE SERVICE:
A T & T

ELECTRICAL SERVICE:
S.M.U.D.

GAS SUPPLY:
P.G. & E.

SCHOOL DISTRICT:
RIO LINDA UNION SCHOOL DISTRICT

PARK DISTRICT:
CITY OF SACRAMENTO

SCALE: 1"=30'

30' 0' 30' 60' 90'

GRAPHIC SCALE: 1"=30'

BAKER WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336~Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009

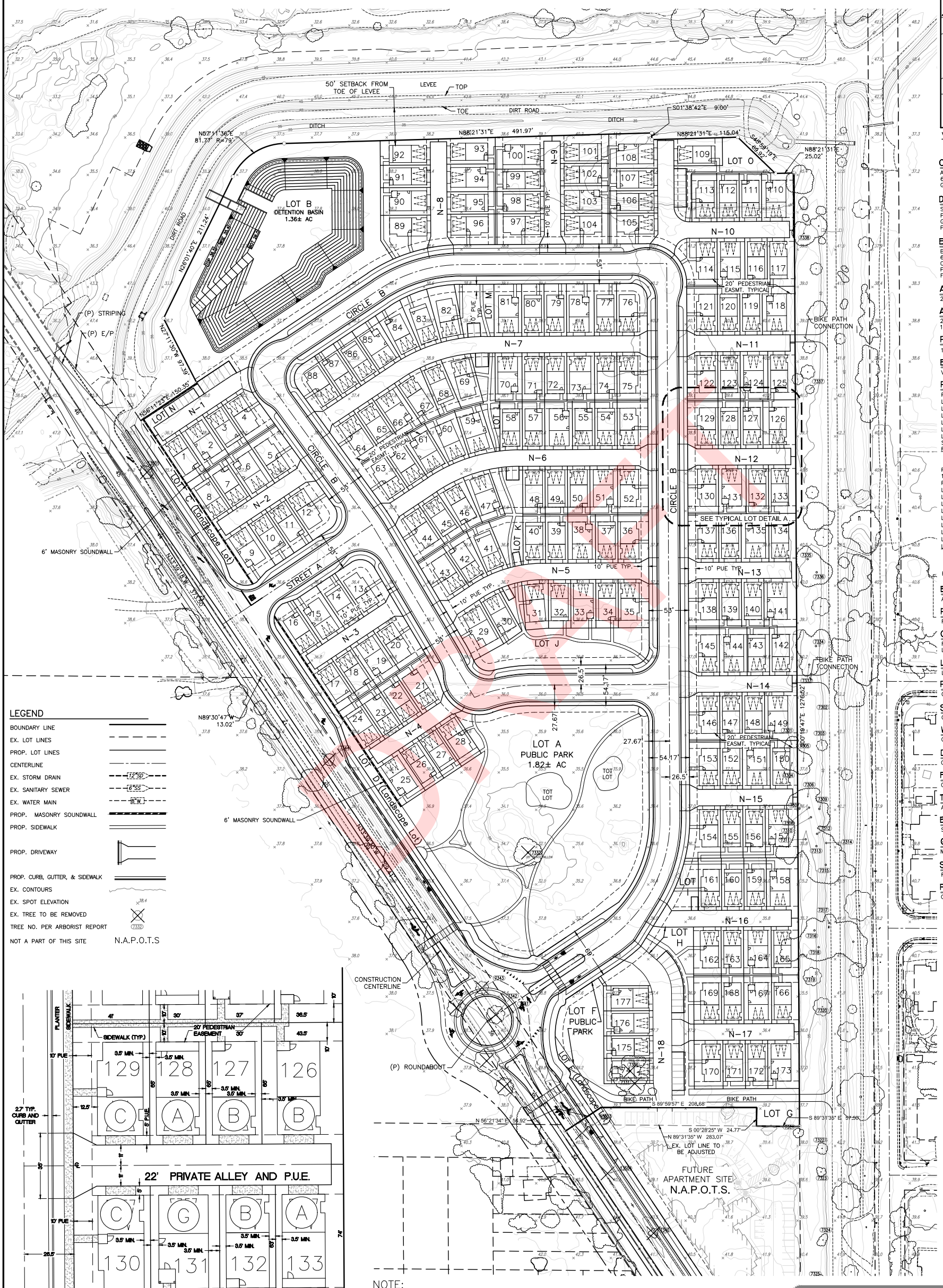
TENTATIVE SUBDIVISION MAP

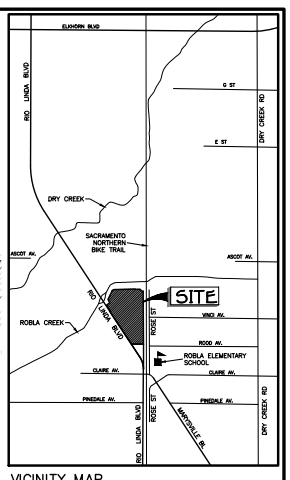
ROBLA ESTATES

CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA

NOVEMBER, 2021

SHEET 1 of 2





VICINITY MAP

NO SCALE

OWNER:
ABDELKARIM ADBALLAH SHEHADEH
6841 WOODCHASE DRIVE
GRANITE BAY, CALIFORNIA 95838

DEVELOPER:
SWIFT CONSTRUCTION
P.O. BOX 3038
GRANITE BAY, CALIFORNIA 95746
PH. (916) 747-5255

ENGINEER:
BAKER-WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CALIFORNIA 95608
PH. (916) 331-4336
FAX (916) 331-4430

ASSESSOR'S PARCEL NUMBER:
226-0062-004,008,009,011

ACREAGE:
20.43± ACRES GROSS
12.26± NET GROSS

PROPOSED DENSITY:
177 RES. LOTS/12.26± NET AC = 14.4 du/na

EXISTING USE:
VACANT

PROPOSED USE:

PUBLIC LOTS:

LOT A (park)	= 1.82 AC
LOT B (basin)	= 1.36 AC
LOT C (landscape)	= 0.10 AC
LOT D (landscape)	= 0.15 AC
LOT E (landscape)	= 0.03 AC
LOT F (park)	= 0.24 AC
STREET A & CIR. B	= 3.21 AC
RIO LINDA BLVD.	= 1.26 AC
TOTAL PUBLIC	8.17 AC

PRIVATE LOTS:

177 RESIDENTIAL LOTS	= 9.23 AC
PRIVATE ALLEYS (N1-N18)	= 1.82 AC
LOT G (open space)	= 0.17 AC
LOT H (open space)	= 0.12 AC
LOT I (open space)	= 0.05 AC
LOT J (open space)	= 0.26 AC
LOT K (open space)	= 0.11 AC
LOT L (open space)	= 0.06 AC
LOT M (open space)	= 0.08 AC
LOT N (open space)	= 0.06 AC
LOT O (open space)	= 0.30 AC
TOTAL PRIVATE	12.26 AC

PRIVATE OFF-STREET PARKING = 42 SPACES

EXISTING ZONING:
A

PROPOSED ZONING:
R-2A

COMMUNITY PLAN:
ROBLA NEIGHBORHOOD, SUBURBAN RESIDENTIAL-LOW

LOT SIZE:
LOT SIZE AS SHOWN

PROPOSED IMPROVEMENTS:
CITY OF SACRAMENTO STANDARDS

SEWER:
CITY OF SACRAMENTO

WATER SUPPLY:
CITY OF SACRAMENTO

DRAINAGE:
CITY OF SACRAMENTO

FIRE PROTECTION:
CITY OF SACRAMENTO

TELEPHONE SERVICE:
A T & T

ELECTRICAL SERVICE:
S.M.U.D.

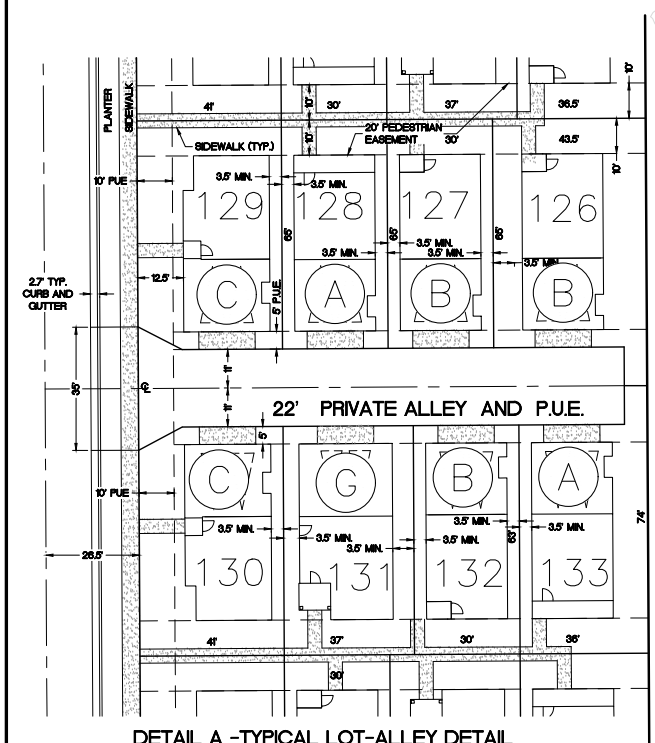
GAS SUPPLY:
N/A

SCHOOL DISTRICT:
RIO LINDA UNION SCHOOL DISTRICT

PARK DISTRICT:
CITY OF SACRAMENTO

LEGEND

BOUNDARY LINE	
EX. LOT LINES	
PROP. LOT LINES	
CENTERLINE	
EX. STORM DRAIN	12"SD
EX. SANITARY SEWER	6"SS
EX. WATER MAIN	8"W
PROP. MASONRY SOUNDWALL	
PROP. SIDEWALK	
PROP. DRIVEWAY	
PROP. CURB, GUTTER, & SIDEWALK	
EX. CONTOURS	
EX. SPOT ELEVATION	38.4
EX. TREE TO BE REMOVED	
TREE NO. PER ARBORIST REPORT	7332
NOT A PART OF THIS SITE	N.A.P.O.T.S



DETAIL A -TYPICAL LOT-ALLEY DETAIL

SCALE: 1"=20'

NOTE:
OWNER/DEVELOPER MAY ALTER HOME TO BE PLACED ON LOT.

BAKER WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336~Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009

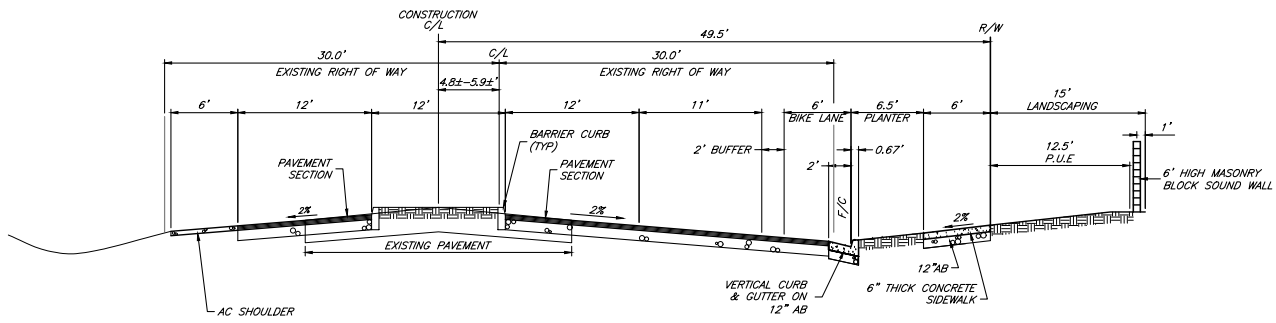
TENTATIVE SUBDIVISION MAP

ROBLA ESTATES

CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA

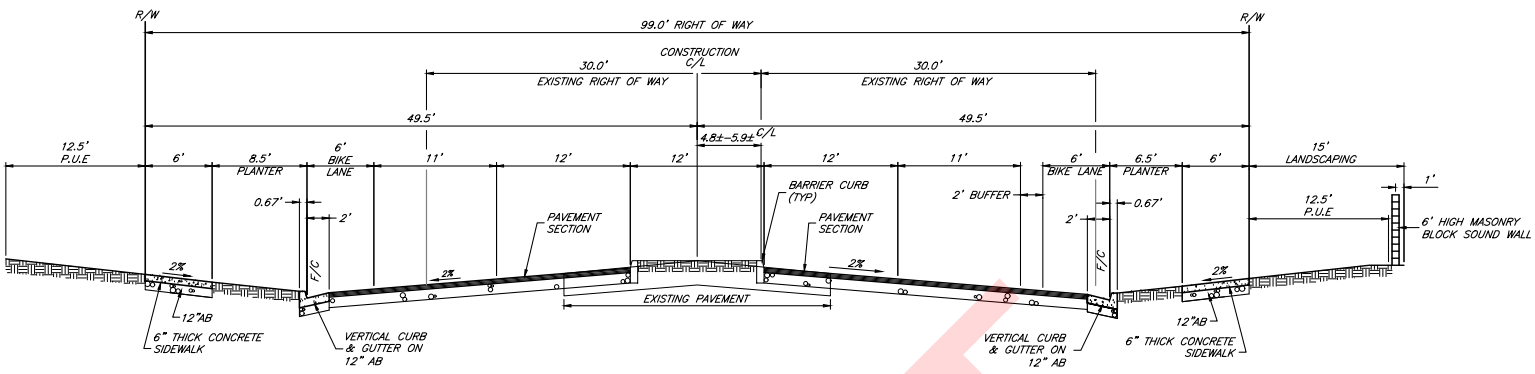
NOVEMBER, 2021

SHEET 2 of 2



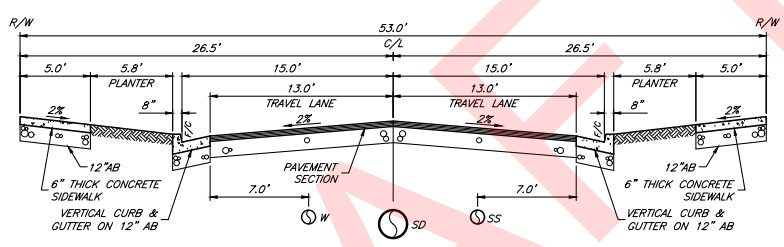
SECTION RIO LINDA BOULEVARD (INTERIM)

NO SCALE



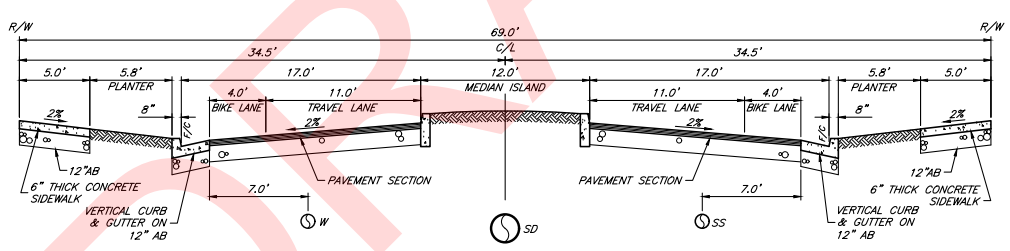
SECTION RIO LINDA BOULEVARD (ULTIMATE)

NO SCALE



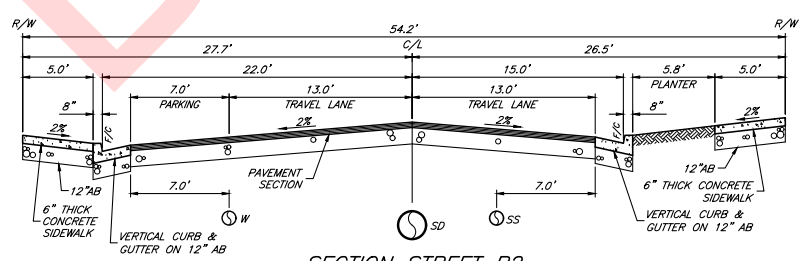
SECTION STREET A

NO SCALE



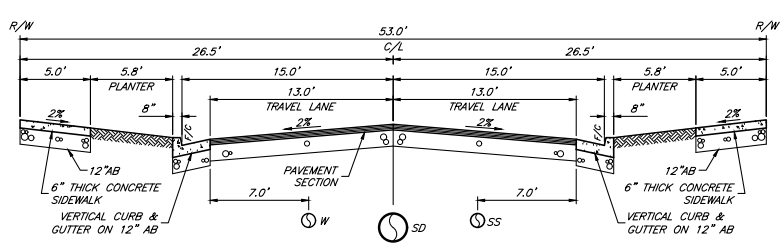
SECTION STREET B1

NO SCALE



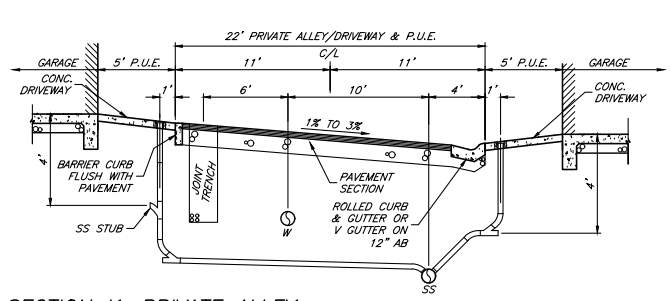
SECTION STREET B2

NO SCALE



SECTION STREET B3

NO SCALE



SECTION K: PRIVATE ALLEY

NO SCALE

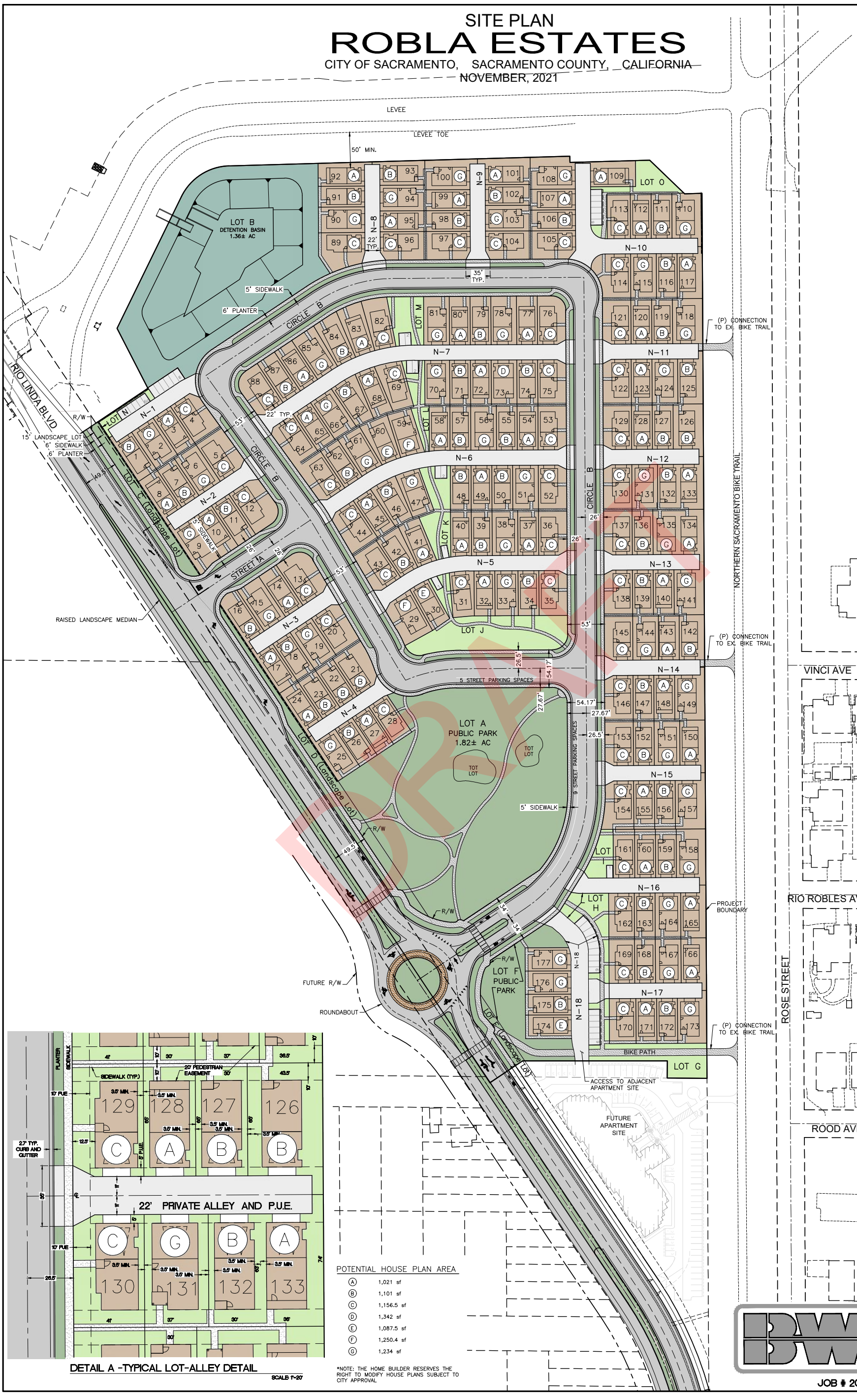
BAKER WILLIAMS
ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336~Fax (916)331-4430
EMAIL: office@bwengineers.com

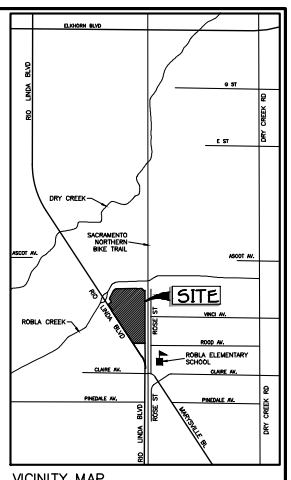
JOB # 20-02-009

DRAFT

SITE PLAN
ROBLA ESTATES

CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA
NOVEMBER, 2021





VICINITY MAP

NO SCALE

OWNER:
ABDELKARIM ADBALLAH SHEHADEH
6841 WOODCHASE DRIVE
GRANITE BAY, CALIFORNIA 95838

DEVELOPER:
SWIFT CONSTRUCTION
P.O. BOX 3038
GRANITE BAY, CALIFORNIA 95746
PH. (916) 747-5255

ENGINEER:
BAKER-WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CALIFORNIA 95608
PH. (916) 331-4336
FAX (916) 331-4430

ASSESSOR'S PARCEL NUMBER:
226-0062-004,008,009,011

ACREAGE:
20.43± ACRES GROSS
12.26± NET GROSS

PROPOSED DENSITY:
177 RES. LOTS/12.26± NET AC = 14.4 du/na

EXISTING USE:
VACANT

PROPOSED USE:

PUBLIC LOTS:

LOT A (park)	= 1.82 AC
LOT B (basin)	= 1.36 AC
LOT C (landscape)	= 0.10 AC
LOT D (landscape)	= 0.15 AC
LOT E (landscape)	= 0.03 AC
LOT F (park)	= 0.24 AC
STREET A & CIR. B	= 3.21 AC
RIO LINDA BLVD.	= 1.26 AC
TOTAL PUBLIC	8.17 AC

PRIVATE LOTS:

177 RESIDENTIAL LOTS	= 9.23 AC
PRIVATE ALLEYS (N1-N18)	= 1.82 AC
LOT G (open space)	= 0.17 AC
LOT H (open space)	= 0.12 AC
LOT I (open space)	= 0.05 AC
LOT J (open space)	= 0.26 AC
LOT K (open space)	= 0.11 AC
LOT L (open space)	= 0.06 AC
LOT M (open space)	= 0.08 AC
LOT N (open space)	= 0.06 AC
LOT O (open space)	= 0.30 AC
TOTAL PRIVATE	12.26 AC

PRIVATE OFF-STREET PARKING = 42 SPACES

EXISTING ZONING:
A

PROPOSED ZONING:
R-2A

COMMUNITY PLAN:
ROBLA NEIGHBORHOOD, SUBURBAN RESIDENTIAL-LOW

LOT SIZE:
LOT SIZE AS SHOWN

PROPOSED IMPROVEMENTS:
CITY OF SACRAMENTO STANDARDS

SEWER:
CITY OF SACRAMENTO

WATER SUPPLY:
CITY OF SACRAMENTO

DRAINAGE:
CITY OF SACRAMENTO

FIRE PROTECTION:
CITY OF SACRAMENTO

TELEPHONE SERVICE:
A T & T

ELECTRICAL SERVICE:
S.M.U.D.

GAS SUPPLY:
N/A

SCHOOL DISTRICT:
RIO LINDA UNION SCHOOL DISTRICT

PARK DISTRICT:
CITY OF SACRAMENTO

LEGEND

- PUBLIC MAINTAINED PARKS/ LANDSCAPE
- DETENTION BASIN (PUBLIC)
- LANDSCAPE AREAS (PRIVATE)
- PRIVATE ALLEYS
- CONCRETE
- PUBLIC STREETS
- SOUND WALL

SCALE: 1"=50'

50' 0' 50' 100'
GRAPHIC SCALE: 1"=50'

DETAIL A -TYPICAL LOT-ALLEY DETAIL

SCALE 1"=20'

POTENTIAL HOUSE PLAN AREA

A	1,021 sf
B	1,101 sf
C	1,156.5 sf
D	1,342 sf
E	1,087.5 sf
F	1,250.4 sf
G	1,234 sf

*NOTE: THE HOME BUILDER RESERVES THE RIGHT TO MODIFY HOUSE PLANS SUBJECT TO CITY APPROVAL

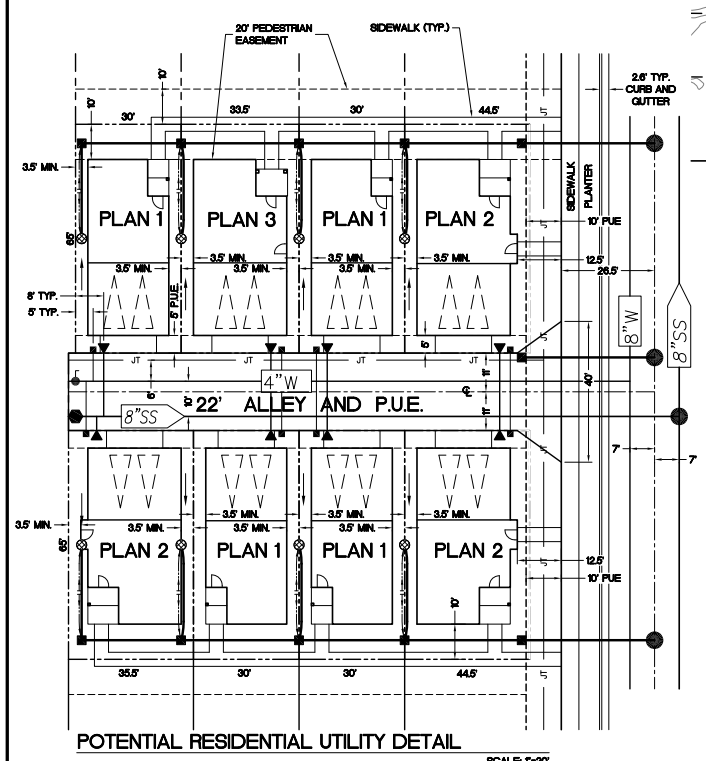
BAKER WILLIAMS
ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336~Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009

DRAFT

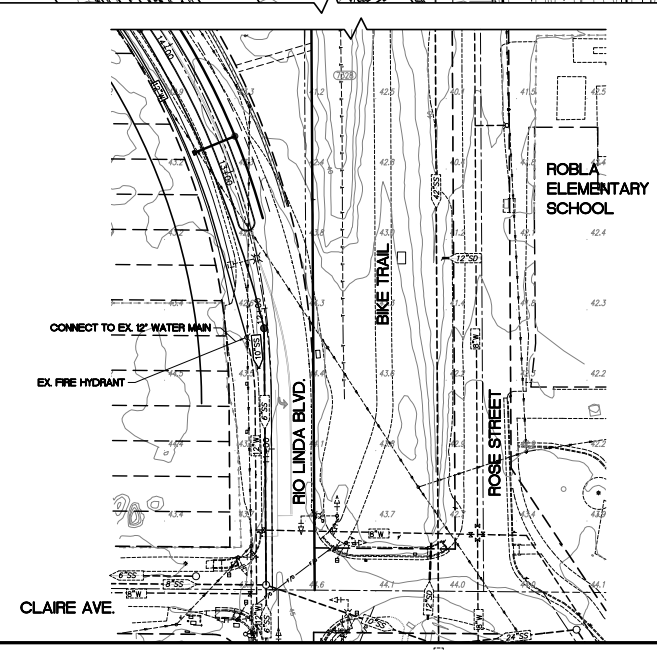
SECTION K: PRIVATE ALLEY

NO SCALE



POTENTIAL RESIDENTIAL UTILITY DETAIL

SCALE: 1"=20'



LEGEND

	EXISTING	PROPOSED
DROP INLET		
MANHOLE		
SEWER SERVICE		
STORM DRAIN	12"SD	12"SD
SANITARY SEWER	12"SS	12"SS
WATER MAIN	8"W	8"W
WATER SERVICE		
BLOW-OFF		
POWER POLE	PP	
JOINT POLE	JP	
FENCE		
FLOW LINE		
EDGE OF PAVEMENT		
CURB, GUTTER & SIDEWALK		
CENTER LINE		
PROPERTY LINE		
DRAINAGE FLOW DIRECTION		

SCALE: 1"=50'

50' 0' 50' 100' 150'

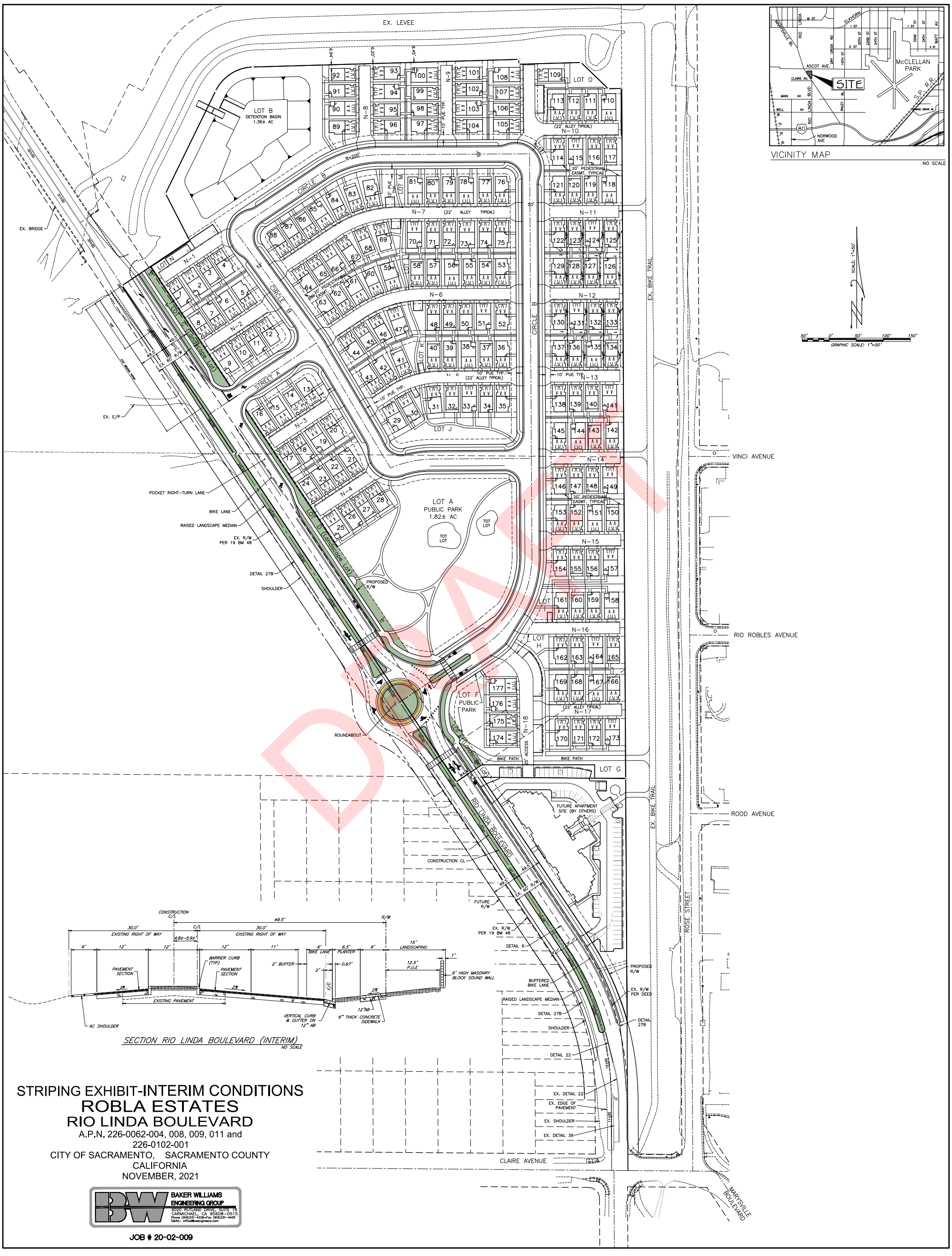
GRAPHIC SCALE: 1"=50'

PRELIMINARY UTILITY PLAN
ROBLA ESTATES

CITY OF SACRAMENTO,
SACRAMENTO COUNTY, CALIFORNIA
NOVEMBER, 2021

BAKER WILLIAMS
ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336~Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009



STRIPING EXHIBIT-INTERIM CONDITIONS
ROBLA ESTATES
RIO LINDA BOULEVARD

A.P.N. 226-0062-004, 008, 009, 011 and 226-0102-001

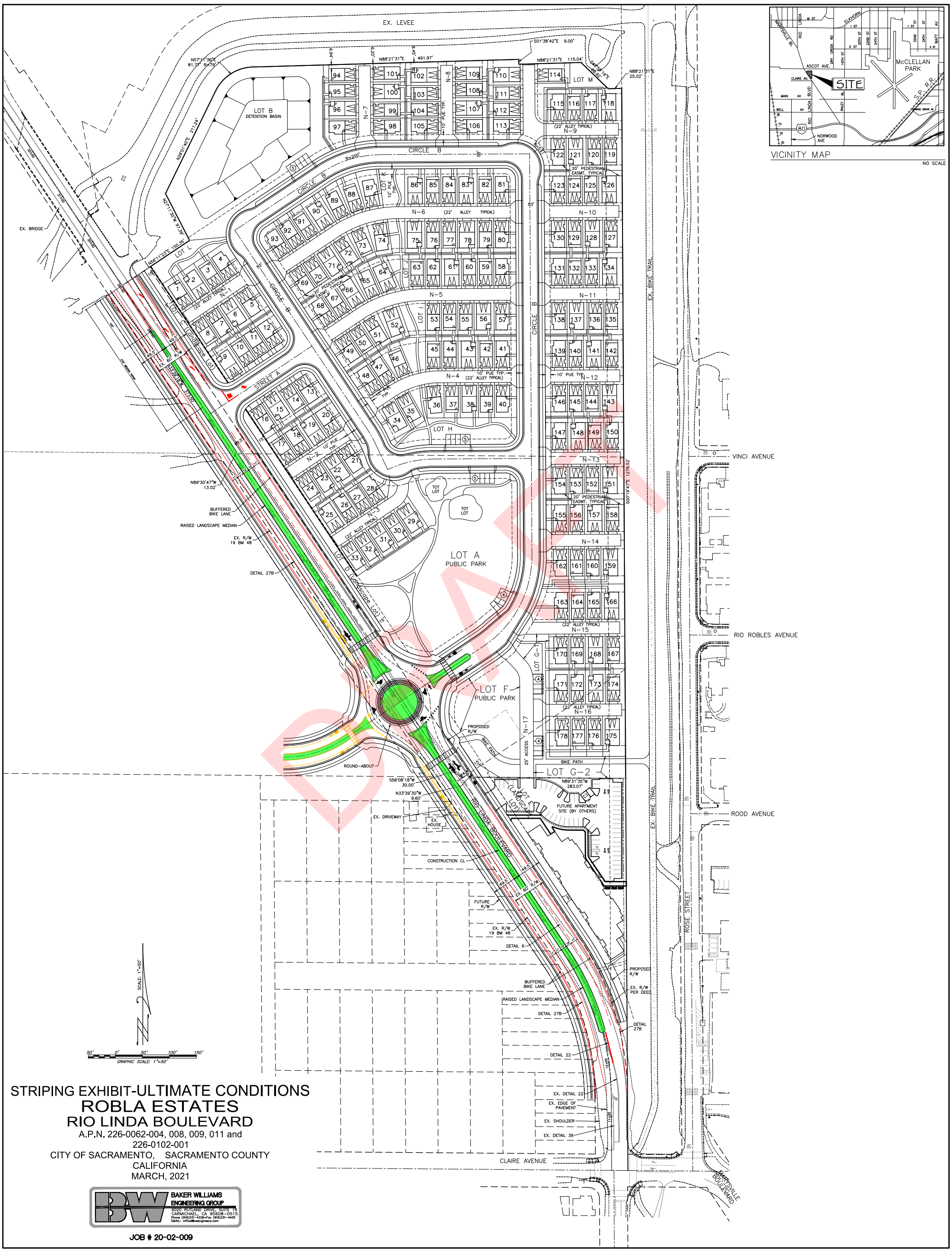
CITY OF SACRAMENTO, SACRAMENTO COUNTY

CALIFORNIA

NOVEMBER, 2021

BAKER WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336-Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009



VICINITY MAP

NO SCALE

STRIPING EXHIBIT-ULTIMATE CONDITIONS

ROBLA ESTATES

RIO LINDA BOULEVARD

A.P.N. 226-0062-004, 008, 009, 011 and 226-0102-001

CITY OF SACRAMENTO, SACRAMENTO COUNTY

CALIFORNIA

MARCH, 2021

BAKER WILLIAMS ENGINEERING GROUP
6020 RUTLAND DRIVE, SUITE 19
CARMICHAEL, CA 95608-0515
Phone (916)331-4336-Fax (916)331-4430
EMAIL: office@bwengineers.com

JOB # 20-02-009

DRAFT

APPENDIX B: TRAFFIC VOLUME AND SPEED COUNTS

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/22/22	4	0	0	0	0	4	8	11	13	7	2	1	1	0	51	46-55	24
01:00	3	0	0	0	0	3	3	3	12	11	1	1	0	0	37	51-60	23
02:00	2	0	0	0	0	3	1	9	9	3	5	0	1	0	33	46-55	18
03:00	2	0	0	0	0	3	5	5	8	4	5	5	1	0	38	46-55	13
04:00	2	0	**1**	0	0	1	1	6	6	10	4	2	0	0	33	51-60	16
05:00	2	0	0	0	0	3	2	10	11	16	16	7	2	**1**	70	56-65	32
06:00	7	0	0	**1**	1	1	12	18	17	13	4	**12**	**4**	1	91	46-55	35
07:00	3	0	1	0	0	1	12	39	45	47	25	7	1	1	182	51-60	92
08:00	12	0	0	0	0	**12**	26	48	48	53	31	10	3	1	244	51-60	101
09:00	12	0	0	1	2	11	29	76	111	**79**	**35**	7	4	1	368	51-60	190
10:00	12	0	1	0	**9**	11	40	91	**141**	62	21	10	3	1	402	46-55	232
11:00	**22**	0	0	0	3	9	**77**	**116**	116	74	19	4	2	0	**442**	46-55	232
12 PM	**26**	0	0	0	3	5	63	**127**	**133**	**52**	**21**	4	0	0	**434**	46-55	260
13:00	17	0	0	4	8	37	59	112	92	51	14	2	**2**	**2**	400	46-55	204
14:00	21	0	2	2	12	19	44	126	99	47	8	4	1	0	385	46-55	225
15:00	24	**2**	1	0	0	21	50	112	112	40	15	**5**	0	1	383	46-55	224
16:00	21	1	1	0	3	25	90	115	77	30	11	4	0	1	379	41-50	205
17:00	16	2	**7**	1	3	51	**105**	120	73	27	8	5	1	0	419	41-50	225
18:00	19	0	2	**7**	**27**	**68**	97	78	31	14	8	1	2	0	354	41-50	175
19:00	11	0	0	0	2	22	59	67	53	17	7	3	0	0	241	41-50	126
20:00	4	0	0	0	6	23	51	43	46	14	5	4	0	0	196	41-50	94
21:00	5	0	0	1	2	7	46	55	39	13	1	0	0	0	169	41-50	101
22:00	7	0	0	1	5	13	40	34	30	11	8	1	1	0	151	41-50	74
23:00	2	0	0	0	1	3	26	24	26	14	6	1	0	1	104	46-55	50
Total	256	5	16	18	87	356	946	1445	1348	709	280	100	29	11	5606		
Percent	4.6%	0.1%	0.3%	0.3%	1.6%	6.4%	16.9%	25.8%	24.0%	12.6%	5.0%	1.8%	0.5%	0.2%			
AM Peak	11:00		04:00	06:00	10:00	08:00	11:00	11:00	10:00	09:00	09:00	06:00	06:00	05:00	11:00		
Vol.	22		1	1	9	12	77	116	141	79	35	12	4	1	442		
PM Peak	12:00	15:00	17:00	18:00	18:00	18:00	17:00	12:00	12:00	12:00	12:00	15:00	13:00	13:00	12:00		
Vol.	26	2	7	7	27	68	105	127	133	52	21	5	2	2	434		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/23/22	0	0	0	0	1	6	14	17	7	6	0	1	2	0	54	41-50	31
01:00	1	0	0	0	0	6	17	13	12	2	1	2	0	0	54	41-50	30
02:00	3	**1**	0	0	1	3	3	12	9	3	1	2	0	0	38	46-55	21
03:00	2	0	0	**1**	1	4	4	8	5	2	1	0	0	**1**	29	44-53	13
04:00	1	0	0	0	0	2	2	7	3	5	2	1	0	0	23	44-53	10
05:00	1	0	0	0	0	6	4	11	11	3	1	0	0	1	38	46-55	22
06:00	3	0	0	0	1	4	13	13	12	7	7	1	0	0	61	41-50	26
07:00	1	0	0	0	0	3	11	14	23	20	13	3	0	1	89	51-60	43
08:00	7	0	0	1	**2**	6	14	30	47	65	25	**15**	3	1	216	51-60	112
09:00	**14**	0	0	0	0	2	22	**79**	106	86	**37**	9	**4**	0	359	51-60	192
10:00	9	0	0	1	0	2	32	76	118	91	33	10	3	0	375	51-60	209
11:00	7	0	0	0	2	**7**	**37**	75	**120**	**98**	29	8	0	0	**383**	51-60	218
12 PM	**22**	0	0	0	1	4	28	73	91	66	**32**	4	1	0	322	46-55	164
13:00	18	0	0	0	0	14	56	95	**114**	69	20	6	4	0	396	46-55	209
14:00	13	0	**1**	1	6	16	31	65	111	**78**	28	**8**	1	0	359	51-60	189
15:00	15	0	0	0	0	6	39	77	110	78	28	5	1	**1**	360	49-58	188
16:00	14	0	0	0	**8**	9	36	114	87	63	25	3	**5**	0	364	46-55	201
17:00	14	0	1	**12**	8	**46**	**80**	**137**	75	42	10	3	1	1	**430**	41-50	217
18:00	12	0	0	3	4	39	64	85	56	21	7	2	0	0	293	41-50	149
19:00	12	0	0	0	3	16	61	70	55	21	9	2	2	0	251	41-50	131
20:00	8	0	0	0	5	6	34	52	42	23	15	2	0	0	187	46-55	94
21:00	0	0	0	0	0	8	25	28	40	16	7	2	0	0	126	46-55	68
22:00	3	0	0	0	2	7	16	19	24	18	6	1	0	0	96	46-55	43
23:00	2	0	0	0	0	0	6	16	20	13	2	6	1	0	66	46-55	36
Total	182	1	2	19	45	222	649	1186	1298	896	339	96	28	6	4969		
Percent	3.7%	0.0%	0.0%	0.4%	0.9%	4.5%	13.1%	23.9%	26.1%	18.0%	6.8%	1.9%	0.6%	0.1%			
AM Peak	09:00	02:00		03:00	08:00	11:00	11:00	09:00	11:00	11:00	09:00	08:00	09:00	03:00	11:00		
Vol.	14	1		1	2	7	37	79	120	98	37	15	4	1	383		
PM Peak	12:00		14:00	17:00	16:00	17:00	17:00	17:00	13:00	14:00	12:00	14:00	16:00	15:00	17:00		
Vol.	22		1	12	8	46	80	137	114	78	32	8	5	1	430		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/24/22	0	0	0	0	0	3	6	7	12	7	4	3	1	0	43	50-59	19
01:00	2	0	0	0	2	0	2	5	8	4	2	2	2	0	29	46-55	13
02:00	2	0	0	1	0	2	2	3	5	7	1	2	0	0	25	51-60	12
03:00	0	0	0	0	0	1	3	5	16	10	4	3	1	0	43	51-60	26
04:00	0	0	0	0	0	0	1	20	14	20	10	6	2	0	73	51-60	34
05:00	4	0	0	1	6	19	32	43	60	40	22	3	2	1	233	46-55	103
06:00	11	0	0	0	10	13	64	107	84	30	17	**9**	0	**2**	347	46-55	191
07:00	**63**	**22**	**69**	**50**	**47**	**59**	**102**	**144**	90	27	9	2	0	0	**684**	41-50	246
08:00	28	6	5	13	19	27	95	103	**122**	57	**28**	9	0	0	512	46-55	225
09:00	13	0	0	0	3	13	25	77	105	**66**	13	8	**3**	0	326	46-55	182
10:00	14	0	1	0	3	10	34	91	103	61	18	4	1	0	340	46-55	194
11:00	12	0	0	0	2	6	45	85	96	66	19	9	2	0	342	46-55	181
12 PM	17	1	0	3	7	24	44	83	83	59	17	4	1	0	343	46-55	166
13:00	11	0	0	0	13	24	63	100	101	**62**	**22**	**6**	0	0	402	46-55	201
14:00	40	**5**	**16**	**17**	**29**	**52**	70	118	78	34	10	2	1	**1**	473	46-55	196
15:00	37	1	4	6	12	44	94	124	100	47	11	4	0	0	**484**	46-55	224
16:00	**51**	1	3	5	8	21	80	**135**	**104**	40	12	2	**2**	0	464	46-55	239
17:00	41	0	0	5	14	48	**99**	117	66	36	12	2	1	1	442	41-50	216
18:00	11	0	1	7	10	31	67	114	58	26	12	6	1	0	344	41-50	181
19:00	8	0	0	1	11	14	55	66	48	25	7	4	0	1	240	41-50	121
20:00	4	0	0	0	2	17	31	35	29	32	10	3	1	1	165	41-50	66
21:00	2	0	0	0	2	6	15	50	39	22	8	5	2	0	151	46-55	89
22:00	3	0	0	0	3	4	16	24	33	19	8	3	2	0	115	46-55	57
23:00	2	0	0	0	0	2	9	21	12	12	4	1	0	0	63	46-55	33
Total	376	36	99	109	203	440	1054	1677	1466	809	280	102	25	7	6683		
Percent	5.6%	0.5%	1.5%	1.6%	3.0%	6.6%	15.8%	25.1%	21.9%	12.1%	4.2%	1.5%	0.4%	0.1%			
AM Peak	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00	09:00	08:00	06:00	09:00	06:00	07:00		
Vol.	63	22	69	50	47	59	102	144	122	66	28	9	3	2	684		
PM Peak	16:00	14:00	14:00	14:00	14:00	14:00	17:00	16:00	16:00	13:00	13:00	13:00	16:00	14:00	15:00		
Vol.	51	5	16	17	29	52	99	135	104	62	22	6	2	1	484		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/25/22	1	0	0	0	1	1	5	5	12	3	4	3	1	0	36	46-55	17
01:00	1	0	0	0	0	0	4	6	5	3	4	5	0	0	28	46-55	11
02:00	1	0	0	1	0	4	8	2	7	4	3	1	0	0	31	36-45	12
03:00	1	0	0	0	1	3	5	17	7	9	3	6	0	0	52	46-55	24
04:00	0	0	0	0	1	5	3	25	22	12	10	2	1	0	81	46-55	47
05:00	4	0	0	7	3	19	28	50	56	45	17	5	**2**	0	236	46-55	106
06:00	9	0	0	0	9	34	86	93	86	39	10	2	1	0	369	41-50	179
07:00	**51**	**35**	**57**	**43**	**42**	**82**	**132**	116	61	15	8	0	0	**3**	**645**	41-50	248
08:00	30	13	7	15	26	46	85	**134**	108	52	17	4	0	0	537	46-55	242
09:00	10	0	0	0	1	9	39	83	**115**	**69**	**24**	8	2	0	360	46-55	198
10:00	16	0	0	0	3	11	33	98	104	57	14	**9**	1	2	348	46-55	202
11:00	15	0	0	0	3	7	38	78	100	53	17	7	0	0	318	46-55	178
12 PM	15	0	0	1	7	13	27	75	**119**	**55**	**23**	1	0	2	338	46-55	194
13:00	15	0	0	10	15	19	66	114	88	40	11	0	2	0	380	46-55	202
14:00	35	**5**	**5**	11	17	42	99	131	101	34	12	3	1	2	**498**	45-54	232
15:00	**39**	2	3	**15**	**28**	34	79	121	110	39	9	2	**3**	1	485	46-55	231
16:00	39	0	0	3	5	40	**104**	**135**	77	52	22	4	2	0	483	41-50	239
17:00	30	0	1	11	22	40	95	114	82	25	11	2	1	0	434	41-50	209
18:00	14	0	1	3	13	**48**	91	108	56	35	9	1	1	0	380	41-50	199
19:00	8	0	0	0	7	7	49	53	83	28	13	**6**	3	0	257	46-55	136
20:00	1	1	0	1	4	13	39	50	43	20	7	4	1	0	184	46-55	93
21:00	5	0	0	0	0	5	20	38	42	18	10	3	1	0	142	46-55	80
22:00	4	0	0	0	0	5	6	21	26	15	5	6	1	**3**	92	46-55	47
23:00	2	0	0	0	0	3	7	9	12	17	8	5	0	1	64	51-60	29
Total	346	56	74	121	208	490	1148	1676	1522	739	271	89	24	14	6778		
Percent	5.1%	0.8%	1.1%	1.8%	3.1%	7.2%	16.9%	24.7%	22.5%	10.9%	4.0%	1.3%	0.4%	0.2%			
AM Peak	07:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00	09:00	09:00	09:00	10:00	05:00	07:00	07:00		
Vol.	51	35	57	43	42	82	132	134	115	69	24	9	2	3	645		
PM Peak	15:00	14:00	14:00	15:00	15:00	18:00	16:00	16:00	12:00	12:00	12:00	19:00	15:00	22:00	14:00		
Vol.	39	5	5	15	28	48	104	135	119	55	23	6	3	3	498		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/26/22	1	0	0	0	1	2	4	6	10	5	6	1	0	0	36	46-55	16
01:00	0	0	0	0	2	1	2	5	8	5	2	3	2	1	31	47-56	13
02:00	0	0	0	0	0	1	3	7	7	5	1	1	1	0	26	46-55	14
03:00	1	0	1	1	0	3	3	3	9	16	1	8	1	0	47	51-60	25
04:00	4	0	0	0	0	0	6	14	19	18	8	2	3	0	74	51-60	37
05:00	3	0	0	0	1	1	33	54	64	54	18	11	**4**	0	243	46-55	118
06:00	11	0	0	4	4	20	49	112	111	62	8	4	0	0	385	46-55	223
07:00	**38**	**13**	**25**	**34**	**55**	**97**	**164**	**158**	96	40	6	6	0	0	**732**	41-50	322
08:00	20	0	3	4	9	22	60	133	**152**	**93**	29	9	1	1	536	46-55	285
09:00	5	0	0	0	4	18	31	75	107	85	**32**	**13**	2	0	372	51-60	192
10:00	7	0	2	4	6	15	57	86	75	51	28	4	2	**2**	339	46-55	161
11:00	15	0	0	0	0	3	40	85	78	64	26	4	0	1	316	46-55	163
12 PM	32	**1**	0	**17**	**31**	48	78	90	84	51	12	0	**2**	**1**	447	46-55	174
13:00	23	0	0	2	14	24	80	100	**123**	**65**	**23**	**5**	1	1	461	46-55	223
14:00	26	0	**3**	8	7	23	54	102	102	61	20	4	2	0	412	46-55	204
15:00	**37**	0	1	8	8	35	78	**116**	116	44	15	4	2	1	**465**	46-55	232
16:00	34	1	0	2	8	30	56	93	102	53	20	5	2	0	406	46-55	195
17:00	25	0	2	7	24	**73**	90	115	86	31	8	1	1	0	463	41-50	205
18:00	16	0	0	1	12	47	**93**	101	72	21	10	3	0	0	376	41-50	194
19:00	10	0	1	2	10	34	73	85	50	23	3	1	0	0	292	41-50	158
20:00	2	0	1	2	8	15	48	70	57	24	3	2	0	0	232	46-55	127
21:00	2	0	0	1	3	7	23	41	25	20	16	1	1	0	140	46-55	66
22:00	0	0	0	1	1	5	12	19	26	14	8	4	2	1	93	46-55	45
23:00	2	0	0	1	0	2	5	12	17	10	2	3	1	0	55	46-55	29
Total	314	15	39	99	208	526	1142	1682	1596	915	305	99	30	9	6979		
Percent	4.5%	0.2%	0.6%	1.4%	3.0%	7.5%	16.4%	24.1%	22.9%	13.1%	4.4%	1.4%	0.4%	0.1%			
AM Peak	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00	08:00	09:00	09:00	05:00	10:00	07:00		
Vol.	38	13	25	34	55	97	164	158	152	93	32	13	4	2	732		
PM Peak	15:00	12:00	14:00	12:00	12:00	17:00	18:00	15:00	13:00	13:00	13:00	13:00	12:00	12:00	15:00		
Vol.	37	1	3	17	31	73	93	116	123	65	23	5	2	1	465		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/27/22	0	0	0	0	1	3	7	11	10	9	1	4	1	0	47	46-55	21
01:00	0	0	0	0	0	1	5	8	8	3	3	2	0	0	30	46-55	16
02:00	1	0	0	1	0	2	9	5	6	4	3	0	0	**1**	32	41-50	14
03:00	2	0	0	1	1	0	7	6	8	9	3	3	0	0	40	51-60	17
04:00	2	0	0	0	2	1	2	17	25	13	10	1	0	0	73	46-55	42
05:00	1	0	0	0	0	4	25	58	68	44	20	**10**	**3**	0	233	46-55	126
06:00	10	0	0	2	7	36	59	88	102	47	16	4	1	0	372	46-55	190
07:00	**54**	**28**	**34**	**51**	**47**	**60**	**126**	134	86	30	5	1	0	0	**656**	41-50	260
08:00	23	3	4	9	12	20	69	**166**	**152**	75	12	4	0	1	550	46-55	318
09:00	19	0	1	0	0	13	40	108	95	**79**	18	9	0	1	383	46-55	203
10:00	14	2	1	2	7	13	37	75	71	58	**28**	3	2	0	313	46-55	146
11:00	14	0	0	0	1	4	44	102	101	55	17	2	0	0	340	46-55	203
12 PM	19	0	0	0	6	18	64	109	**99**	42	12	**5**	1	**3**	378	46-55	208
13:00	16	0	0	1	5	18	64	108	99	**57**	**19**	1	**4**	0	392	46-55	207
14:00	26	0	**7**	6	31	47	76	110	71	48	9	3	0	1	435	41-50	186
15:00	**54**	**6**	6	**16**	**34**	**56**	108	124	80	35	8	3	2	1	**533**	41-50	232
16:00	41	0	0	0	2	41	79	**133**	96	39	13	1	1	0	446	46-55	229
17:00	41	0	0	8	20	34	102	125	72	34	12	3	0	0	451	41-50	227
18:00	10	0	0	1	18	54	**112**	106	57	28	4	3	0	0	393	41-50	218
19:00	13	1	0	0	9	23	55	80	47	30	12	3	0	0	273	41-50	135
20:00	8	0	0	4	0	16	34	63	51	19	8	5	1	0	209	46-55	114
21:00	9	0	0	0	1	9	23	33	31	21	6	2	1	0	136	46-55	64
22:00	4	0	0	0	1	6	10	29	26	18	9	2	1	0	106	46-55	55
23:00	2	0	0	0	1	4	11	12	16	14	8	0	1	2	71	51-60	30
Total	383	40	53	102	206	483	1168	1810	1477	811	256	74	19	10	6892		
Percent	5.6%	0.6%	0.8%	1.5%	3.0%	7.0%	16.9%	26.3%	21.4%	11.8%	3.7%	1.1%	0.3%	0.1%			
AM Peak	07:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00	08:00	09:00	10:00	05:00	05:00	02:00	07:00		
Vol.	54	28	34	51	47	60	126	166	152	79	28	10	3	1	656		
PM Peak	15:00	15:00	14:00	15:00	15:00	15:00	18:00	16:00	12:00	13:00	13:00	12:00	13:00	12:00	15:00		
Vol.	54	6	7	16	34	56	112	133	99	57	19	5	4	3	533		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/28/22	2	0	0	0	1	3	5	12	12	5	6	0	0	0	46	46-55	24
01:00	1	0	0	0	0	2	5	3	5	3	6	2	0	0	27	54-63	9
02:00	1	0	0	1	1	1	3	8	9	5	2	2	0	0	33	46-55	17
03:00	1	0	0	0	0	2	4	13	8	7	6	2	1	0	44	46-55	21
04:00	1	0	0	0	0	4	8	14	22	26	13	0	0	**1**	89	51-60	48
05:00	2	0	0	0	1	3	17	45	66	63	19	3	2	0	221	51-60	129
06:00	7	0	2	3	7	17	55	90	109	55	16	**7**	**4**	1	373	46-55	199
07:00	**52**	**13**	**14**	**28**	**38**	**70**	**100**	**175**	110	50	7	3	1	1	**662**	46-55	285
08:00	15	5	5	12	13	22	88	154	**127**	**70**	20	7	2	0	540	46-55	281
09:00	18	0	0	0	2	16	40	88	97	62	**22**	7	0	0	352	46-55	185
10:00	16	0	0	1	0	17	64	102	89	52	14	4	1	0	360	46-55	191
11:00	16	0	3	2	0	20	58	97	85	57	17	4	1	0	360	46-55	182
12 PM	8	0	0	1	4	20	68	119	108	**43**	20	4	1	0	396	46-55	227
13:00	22	0	0	0	7	26	87	107	105	43	16	4	1	0	418	46-55	212
14:00	28	**3**	**5**	10	13	31	69	**153**	**111**	31	14	6	0	0	474	46-55	264
15:00	**59**	1	3	7	20	60	**143**	114	86	27	10	5	0	1	**536**	41-50	257
16:00	39	2	5	10	**21**	40	85	111	89	36	**21**	5	0	0	464	46-55	200
17:00	49	2	3	**15**	19	**79**	117	99	51	27	6	3	0	1	471	41-50	216
18:00	16	0	0	2	18	58	129	103	59	21	8	4	0	1	419	41-50	232
19:00	14	0	0	0	3	32	73	87	62	29	12	6	1	**2**	321	41-50	160
20:00	10	0	0	0	6	17	43	43	44	33	12	2	1	1	212	46-55	87
21:00	8	0	0	1	10	16	33	61	49	14	9	**7**	1	0	209	46-55	110
22:00	3	0	0	0	1	5	12	23	31	24	13	4	**2**	1	119	49-58	55
23:00	1	0	0	0	0	4	19	21	35	10	5	4	0	0	99	46-55	56
Total	389	26	40	93	185	565	1325	1842	1569	793	294	95	19	10	7245		
Percent	5.4%	0.4%	0.6%	1.3%	2.6%	7.8%	18.3%	25.4%	21.7%	10.9%	4.1%	1.3%	0.3%	0.1%			
AM Peak	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00	08:00	09:00	06:00	06:00	04:00	07:00		
Vol.	52	13	14	28	38	70	100	175	127	70	22	7	4	1	662		
PM Peak	15:00	14:00	14:00	17:00	16:00	17:00	15:00	14:00	14:00	12:00	16:00	21:00	22:00	19:00	15:00		
Vol.	59	3	5	15	21	79	143	153	111	43	21	7	2	2	536		
Total	2246	179	323	561	1142	3082	7432	11318	10276	5672	2025	655	174	67	45152		
Percent	5.0%	0.4%	0.7%	1.2%	2.5%	6.8%	16.5%	25.1%	22.8%	12.6%	4.5%	1.5%	0.4%	0.1%			

15th Percentile :	38 MPH
50th Percentile :	48 MPH
85th Percentile :	56 MPH
95th Percentile :	61 MPH

Stats	
10 MPH Pace Speed :	46-55 MPH
Number in Pace :	21594
Percent in Pace :	47.8%
Number of Vehicles > 45 MPH :	30187
Percent of Vehicles > 45 MPH :	66.9%
Mean Speed(Average) :	47 MPH

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/22/22	2	0	0	1	2	9	22	11	6	1	0	0	0	0	54	40-49	33
01:00	3	0	0	0	3	9	32	12	4	1	0	0	0	0	64	41-50	44
02:00	0	0	0	0	1	6	9	3	1	0	0	0	0	0	20	36-45	15
03:00	0	0	0	0	2	7	14	13	1	0	0	0	0	0	37	41-50	27
04:00	0	0	0	1	3	3	8	5	2	1	0	0	0	0	23	40-49	13
05:00	2	0	0	0	2	8	14	11	4	1	0	0	0	0	42	41-50	25
06:00	4	0	0	2	9	26	35	20	6	1	0	0	0	0	103	36-45	61
07:00	7	0	0	0	13	37	50	23	4	1	1	0	0	0	136	36-45	87
08:00	9	0	0	1	17	59	93	29	7	1	0	0	0	0	216	36-45	152
09:00	13	0	0	**5**	11	86	113	51	5	0	0	0	**1**	0	285	36-45	199
10:00	16	0	0	1	**29**	85	125	**70**	6	1	0	0	0	0	333	36-45	210
11:00	**17**	0	0	2	25	**127**	**158**	48	**9**	**4**	**2**	0	0	0	**392**	36-45	285
12 PM	24	3	1	6	22	114	181	71	11	2	0	0	0	**1**	436	36-45	295
13:00	24	**5**	1	4	18	105	181	**93**	12	1	0	0	0	0	444	36-45	286
14:00	18	0	0	0	13	111	**224**	82	**19**	1	0	0	0	0	468	36-45	335
15:00	**29**	0	1	9	17	116	183	69	12	**3**	**1**	0	0	0	440	36-45	299
16:00	27	0	0	1	34	**164**	168	75	15	2	0	0	0	0	**486**	36-45	332
17:00	19	0	1	**10**	**48**	143	157	42	8	1	0	0	0	0	429	36-45	300
18:00	13	0	1	3	34	112	117	28	5	1	1	0	0	0	315	36-45	229
19:00	10	1	**3**	0	27	80	92	38	6	1	0	0	0	0	258	36-45	172
20:00	3	0	0	1	19	80	87	25	13	1	0	0	0	0	229	36-45	167
21:00	5	0	0	0	16	65	76	30	7	1	1	0	0	0	201	36-45	141
22:00	7	0	0	0	11	49	70	30	6	1	0	0	0	0	174	36-45	119
23:00	1	0	0	0	4	25	39	21	3	0	0	0	0	0	93	36-45	64
Total	253	9	8	47	380	1626	2248	900	172	27	6	0	1	1	5678		
Percent	4.5%	0.2%	0.1%	0.8%	6.7%	28.6%	39.6%	15.9%	3.0%	0.5%	0.1%	0.0%	0.0%	0.0%			
AM Peak	11:00			09:00	10:00	11:00	11:00	10:00	11:00	11:00	11:00		09:00		11:00		
Vol.	17			5	29	127	158	70	9	4	2		1		392		
PM Peak	15:00	13:00	19:00	17:00	17:00	16:00	14:00	13:00	14:00	15:00	15:00			12:00	16:00		
Vol.	29	5	3	10	48	164	224	93	19	3	1			1	486		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/23/22	1	0	0	0	2	13	17	20	5	0	0	0	0	0	58	41-50	37
01:00	0	0	0	0	2	7	17	4	0	1	0	0	0	0	31	36-45	24
02:00	1	0	0	0	1	5	13	10	2	2	0	0	0	0	34	41-50	23
03:00	0	0	0	0	1	4	4	7	0	1	0	0	0	0	17	41-50	11
04:00	0	0	0	1	1	9	11	2	4	1	0	0	0	0	29	36-45	20
05:00	1	0	0	**3**	1	7	7	3	1	1	0	0	0	0	24	36-45	14
06:00	2	0	0	1	2	7	23	12	5	2	0	0	0	0	54	41-50	35
07:00	2	0	0	0	2	15	33	24	4	0	0	**1**	0	0	81	41-50	57
08:00	3	0	0	1	3	34	73	47	13	2	**1**	0	0	0	177	41-50	120
09:00	**16**	0	0	0	**9**	31	122	80	**30**	2	0	0	0	0	290	41-50	202
10:00	13	0	0	0	0	55	139	80	14	4	1	0	0	0	306	41-50	219
11:00	13	0	0	0	3	**67**	**158**	**83**	22	**5**	0	0	**1**	0	**352**	41-50	241
12 PM	17	0	0	0	5	**106**	**206**	99	24	2	0	0	0	0	**459**	36-45	312
13:00	12	0	0	1	15	74	195	96	21	2	0	0	0	0	416	41-50	291
14:00	12	0	0	0	6	50	158	**134**	**28**	4	0	0	0	0	392	41-50	292
15:00	**18**	0	0	0	1	52	155	109	23	**8**	**1**	0	0	0	367	41-50	264
16:00	16	0	0	1	8	77	182	101	17	4	0	0	0	0	406	41-50	283
17:00	17	0	0	**3**	**32**	99	121	64	12	0	1	0	0	0	349	36-45	220
18:00	18	0	0	0	10	60	126	77	13	3	0	0	0	0	307	41-50	203
19:00	11	0	0	0	7	54	92	67	19	1	0	0	0	0	251	41-50	159
20:00	6	0	**1**	0	6	52	70	61	22	1	0	0	0	0	219	41-50	131
21:00	2	0	0	2	2	24	56	31	16	3	0	0	0	0	136	41-50	87
22:00	1	0	0	0	2	17	39	37	9	2	0	0	0	0	107	41-50	76
23:00	4	**1**	0	0	1	10	26	20	8	3	1	0	0	0	74	41-50	46
Total	186	1	1	13	122	929	2043	1268	312	54	5	1	1	0	4936		
Percent	3.8%	0.0%	0.0%	0.3%	2.5%	18.8%	41.4%	25.7%	6.3%	1.1%	0.1%	0.0%	0.0%	0.0%			
AM Peak	09:00			05:00	09:00	11:00	11:00	11:00	09:00	11:00	08:00	07:00	11:00		11:00		
Vol.	16			3	9	67	158	83	30	5	1	1	1		352		
PM Peak	15:00	23:00	20:00	17:00	17:00	12:00	12:00	14:00	14:00	15:00	15:00				12:00		
Vol.	18	1	1	3	32	106	206	134	28	8	1				459		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/24/22	0	0	0	1	2	2	8	18	7	1	0	0	0	0	39	41-50	26
01:00	0	0	0	1	2	2	7	12	2	2	0	0	0	0	28	41-50	19
02:00	0	0	0	1	0	1	4	4	0	0	0	0	0	0	10	41-50	8
03:00	1	0	0	0	4	2	7	3	2	0	0	0	0	0	19	41-50	10
04:00	1	0	0	0	1	6	11	13	6	0	0	0	0	0	38	41-50	24
05:00	2	0	0	0	0	24	39	18	9	0	0	0	0	0	92	36-45	63
06:00	6	0	0	0	9	65	69	49	8	0	0	0	0	0	206	36-45	134
07:00	**68**	0	0	**8**	**23**	**90**	142	81	9	2	0	0	0	0	**423**	36-45	232
08:00	23	0	0	8	15	57	**159**	82	15	3	**2**	0	0	**1**	365	41-50	241
09:00	12	0	0	0	8	63	135	68	14	**7**	0	0	0	0	307	41-50	203
10:00	20	**1**	0	0	12	75	139	57	10	1	0	0	0	0	315	36-45	214
11:00	14	0	0	1	6	77	147	**93**	**18**	2	1	0	0	1	360	41-50	240
12 PM	11	0	0	1	18	79	171	71	19	**7**	0	0	0	0	377	36-45	250
13:00	18	0	**4**	2	12	109	157	69	10	1	0	0	0	0	382	36-45	266
14:00	23	0	1	0	15	117	244	98	**20**	0	0	0	0	0	518	36-45	361
15:00	34	0	0	0	28	191	277	100	17	3	0	0	0	0	650	36-45	468
16:00	31	0	0	**7**	17	**197**	**319**	**102**	15	4	0	0	0	**1**	**693**	36-45	516
17:00	**37**	0	0	2	**45**	193	269	84	9	1	**1**	**1**	0	0	642	36-45	462
18:00	12	0	2	0	26	125	157	66	8	2	0	0	0	0	398	36-45	282
19:00	7	0	0	0	8	88	141	53	12	2	0	1	0	0	312	36-45	229
20:00	10	0	0	0	5	29	95	54	11	5	0	0	0	0	209	41-50	149
21:00	6	0	0	1	9	22	57	29	10	1	0	0	0	0	135	41-50	86
22:00	3	0	0	0	2	27	47	21	9	3	0	0	0	0	112	36-45	74
23:00	1	**1**	0	0	3	8	26	23	8	2	1	0	0	0	73	41-50	49
Total	340	2	7	33	270	1649	2827	1268	248	49	5	2	0	3	6703		
Percent	5.1%	0.0%	0.1%	0.5%	4.0%	24.6%	42.2%	18.9%	3.7%	0.7%	0.1%	0.0%	0.0%	0.0%			
AM Peak	07:00	10:00		07:00	07:00	07:00	08:00	11:00	11:00	09:00	08:00			08:00	07:00		
Vol.	68	1		8	23	90	159	93	18	7	2			1	423		
PM Peak	17:00	23:00	13:00	16:00	17:00	16:00	16:00	16:00	14:00	12:00	17:00	17:00		16:00	16:00		
Vol.	37	1	4	7	45	197	319	102	20	7	1	1		1	693		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/25/22	0	0	0	2	4	9	12	6	7	**4**	0	**1**	0	0	45	36-45	21
01:00	1	0	0	0	0	3	10	6	2	1	0	0	0	0	23	41-50	16
02:00	0	0	0	1	2	1	5	5	2	0	0	0	0	0	16	41-50	10
03:00	1	0	0	0	1	9	9	4	2	0	0	0	0	0	26	36-45	18
04:00	1	0	0	0	2	12	10	7	3	0	0	0	0	0	35	36-45	22
05:00	2	0	0	0	7	18	27	21	10	0	0	0	0	0	85	41-50	48
06:00	5	0	0	1	24	77	75	23	6	2	0	0	0	0	213	36-45	152
07:00	**54**	0	0	**21**	**53**	**131**	100	34	11	0	0	0	0	0	**404**	36-45	231
08:00	34	0	0	2	30	90	151	49	10	3	0	0	0	0	369	36-45	241
09:00	16	0	0	0	10	63	119	69	18	1	0	0	0	0	296	41-50	188
10:00	15	0	0	8	16	51	137	**76**	**19**	2	0	0	0	0	324	41-50	213
11:00	10	0	0	0	10	83	**154**	75	19	3	0	0	0	0	354	36-45	237
12 PM	13	0	0	1	5	63	107	108	20	0	0	0	0	0	317	41-50	215
13:00	9	0	0	0	8	103	183	71	23	3	0	0	0	0	400	36-45	286
14:00	30	0	0	4	8	102	234	152	**40**	3	0	0	0	0	573	41-50	386
15:00	**36**	**2**	0	3	24	120	265	156	29	**10**	1	0	0	0	646	41-50	421
16:00	33	0	**10**	**6**	17	118	289	**172**	38	5	0	0	0	0	688	41-50	461
17:00	36	0	0	5	**36**	**186**	**300**	124	16	1	0	0	0	0	**704**	36-45	486
18:00	19	0	1	4	10	110	156	98	22	6	0	0	0	0	426	36-45	266
19:00	6	0	0	3	5	60	132	65	28	3	**2**	0	0	0	304	41-50	197
20:00	3	1	0	0	10	28	85	73	21	0	1	0	0	0	222	41-50	158
21:00	6	0	0	0	3	30	59	53	19	2	1	0	0	0	173	41-50	112
22:00	4	0	0	0	2	11	44	40	16	2	0	0	0	0	119	41-50	84
23:00	1	0	0	1	2	8	23	24	14	3	1	0	0	0	77	41-50	47
Total	335	3	11	62	289	1486	2686	1511	395	54	6	1	0	0	6839		
Percent	4.9%	0.0%	0.2%	0.9%	4.2%	21.7%	39.3%	22.1%	5.8%	0.8%	0.1%	0.0%	0.0%	0.0%			
AM Peak	07:00			07:00	07:00	07:00	11:00	10:00	10:00	00:00		00:00			07:00		
Vol.	54			21	53	131	154	76	19	4		1			404		
PM Peak	15:00	15:00	16:00	16:00	17:00	17:00	17:00	16:00	14:00	15:00	19:00				17:00		
Vol.	36	2	10	6	36	186	300	172	40	10	2				704		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/26/22	1	0	0	1	2	2	15	15	5	0	**1**	0	0	0	42	41-50	30
01:00	1	0	0	0	1	1	11	9	4	3	0	0	0	0	30	41-50	20
02:00	0	0	0	0	0	3	9	9	4	1	0	0	0	0	26	41-50	18
03:00	0	0	0	0	1	1	2	9	2	0	0	0	0	0	15	43-52	11
04:00	4	0	0	0	4	7	16	7	4	3	0	0	0	0	45	40-49	23
05:00	3	0	0	1	5	13	29	22	6	4	1	0	0	0	84	41-50	51
06:00	9	0	0	0	6	48	76	67	13	2	0	0	0	0	221	41-50	143
07:00	**27**	0	0	1	**18**	**82**	**169**	82	**29**	**6**	0	0	0	0	**414**	37-46	251
08:00	27	0	0	1	9	61	142	**93**	13	2	1	0	0	0	349	41-50	235
09:00	10	0	0	0	4	55	129	80	14	4	0	0	0	0	296	41-50	209
10:00	19	0	**1**	**5**	9	57	142	72	10	0	0	0	0	0	315	41-50	214
11:00	12	0	0	1	9	80	137	86	16	3	1	**1**	0	0	346	41-50	223
12 PM	23	0	0	0	9	116	218	115	14	0	0	0	0	0	495	36-45	334
13:00	24	0	0	0	17	89	155	109	27	**6**	1	0	0	0	428	41-50	264
14:00	29	0	0	0	6	86	239	136	30	6	1	0	0	0	533	41-50	375
15:00	42	0	0	0	25	119	290	138	26	3	0	0	0	0	643	41-50	428
16:00	23	0	0	**6**	19	116	**309**	**191**	**32**	4	**2**	0	0	**2**	704	41-50	500
17:00	**54**	**11**	**12**	6	**49**	**170**	289	109	17	2	0	0	0	0	**719**	36-45	459
18:00	16	0	0	0	15	107	194	95	9	1	1	0	0	0	438	36-45	301
19:00	8	0	0	1	11	54	124	82	15	2	0	0	0	0	297	41-50	206
20:00	4	0	0	0	6	46	108	67	17	0	1	0	0	0	249	41-50	175
21:00	6	0	0	0	3	23	81	54	9	4	0	0	0	0	180	41-50	135
22:00	4	0	0	0	4	25	43	33	8	2	0	0	0	0	119	41-50	76
23:00	4	0	1	1	0	4	20	21	8	0	0	0	0	0	59	41-50	41
Total	350	11	14	24	232	1365	2947	1701	332	58	10	1	0	2	7047		
Percent	5.0%	0.2%	0.2%	0.3%	3.3%	19.4%	41.8%	24.1%	4.7%	0.8%	0.1%	0.0%	0.0%	0.0%			
AM Peak	07:00		10:00	10:00	07:00	07:00	07:00	08:00	07:00	07:00	00:00	11:00			07:00		
Vol.	27		1	5	18	82	169	93	29	6	1	1			414		
PM Peak	17:00	17:00	17:00	16:00	17:00	17:00	16:00	16:00	16:00	13:00	16:00			16:00	17:00		
Vol.	54	11	12	6	49	170	309	191	32	6	2			2	719		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/27/22	1	0	0	0	0	10	18	11	10	0	0	0	0	0	50	39-48	29
01:00	0	0	0	0	0	4	11	11	2	1	1	0	0	0	30	41-50	22
02:00	0	0	0	0	1	2	6	5	0	0	0	0	0	0	14	41-50	11
03:00	0	**1**	0	0	0	4	3	14	2	1	0	0	0	0	25	41-50	17
04:00	1	0	0	0	2	4	12	9	5	2	0	0	0	0	35	41-50	21
05:00	3	0	0	**2**	5	19	42	21	6	1	0	0	0	0	99	41-50	63
06:00	11	0	0	0	10	46	84	33	11	1	1	0	0	0	197	36-45	130
07:00	**45**	0	0	0	15	**114**	**157**	70	8	**3**	1	0	0	0	**413**	36-45	271
08:00	30	0	0	0	13	82	125	77	18	3	0	0	0	0	348	36-45	207
09:00	17	0	0	0	10	57	133	59	16	1	**2**	0	0	0	295	40-49	192
10:00	8	0	0	0	4	66	121	70	17	2	1	0	0	0	289	41-50	191
11:00	19	0	0	0	**17**	69	151	**78**	**19**	2	0	0	0	0	355	41-50	229
12 PM	22	0	0	1	17	87	164	85	13	4	**2**	0	0	0	395	36-45	251
13:00	16	0	0	0	12	67	155	119	**24**	2	0	0	0	0	395	41-50	274
14:00	39	0	0	2	17	156	281	95	18	4	0	0	0	0	612	36-45	437
15:00	**53**	**3**	2	3	21	142	270	112	12	4	0	0	0	0	622	36-45	412
16:00	41	0	3	9	28	167	**303**	**145**	22	3	0	0	0	0	**721**	36-45	470
17:00	42	0	1	8	**38**	**201**	291	90	16	0	0	0	0	0	687	36-45	492
18:00	21	0	**4**	**12**	27	139	178	66	11	0	1	0	0	0	459	36-45	317
19:00	7	0	0	0	9	62	131	67	9	4	0	0	0	0	289	41-50	198
20:00	8	0	0	0	1	42	117	69	8	0	0	0	0	0	245	41-50	186
21:00	8	0	0	0	0	36	84	56	13	**5**	0	0	0	0	202	41-50	140
22:00	2	0	0	0	0	4	45	39	13	4	0	0	0	0	107	41-50	84
23:00	1	0	0	0	2	10	33	20	7	4	0	0	0	0	77	41-50	53
Total	395	4	10	37	249	1590	2915	1421	280	51	9	0	0	0	6961		
Percent	5.7%	0.1%	0.1%	0.5%	3.6%	22.8%	41.9%	20.4%	4.0%	0.7%	0.1%	0.0%	0.0%	0.0%			
AM Peak	07:00	03:00		05:00	11:00	07:00	07:00	11:00	11:00	07:00	09:00				07:00		
Vol.	45	1		2	17	114	157	78	19	3	2				413		
PM Peak	15:00	15:00	18:00	18:00	17:00	17:00	16:00	16:00	13:00	21:00	12:00				16:00		
Vol.	53	3	4	12	38	201	303	145	24	5	2				721		

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
01/28/22	2	0	0	**1**	1	4	14	13	2	0	0	0	0	0	37	41-50	27
01:00	1	0	0	0	1	3	9	6	4	0	0	0	0	0	24	41-50	15
02:00	0	0	0	0	0	1	3	4	1	2	0	0	0	0	11	41-50	7
03:00	2	0	1	0	0	4	15	7	3	3	0	0	0	0	35	41-50	22
04:00	1	0	0	0	0	9	12	18	4	2	0	0	0	0	46	41-50	30
05:00	5	0	0	0	1	23	25	18	8	1	0	0	0	0	81	36-45	48
06:00	5	0	0	1	8	50	93	44	6	2	0	0	0	0	209	36-45	143
07:00	**35**	0	0	0	16	**106**	**178**	79	11	2	0	0	0	0	**427**	36-45	284
08:00	21	0	0	0	8	59	145	**90**	13	**5**	0	0	0	0	341	41-50	235
09:00	18	0	0	0	**18**	63	116	60	10	2	0	0	0	0	287	36-45	179
10:00	17	0	0	1	11	78	132	66	13	3	0	0	0	0	321	36-45	210
11:00	15	0	**2**	1	12	91	171	87	**28**	1	**1**	0	0	0	409	36-45	262
12 PM	13	0	0	0	13	89	165	90	17	5	0	0	0	0	392	41-50	255
13:00	28	0	0	1	8	101	204	102	**23**	2	0	0	0	0	469	39-48	306
14:00	24	0	0	0	19	131	**298**	116	20	4	**1**	0	0	**1**	614	36-45	429
15:00	**50**	0	1	3	25	161	270	**118**	18	3	1	0	0	0	650	36-45	431
16:00	38	0	0	**8**	31	203	295	111	21	7	0	0	0	0	**714**	36-45	498
17:00	38	0	**2**	4	**40**	**231**	235	81	14	4	1	0	0	1	651	36-45	466
18:00	21	0	0	2	33	185	184	53	8	4	1	0	0	0	491	36-45	369
19:00	17	0	0	0	14	79	145	61	20	8	0	0	0	0	344	36-45	224
20:00	14	0	0	2	5	41	111	72	16	3	0	0	0	1	265	41-50	183
21:00	6	0	0	0	1	39	76	78	22	**9**	1	0	0	0	232	41-50	154
22:00	10	0	0	0	5	28	73	50	12	5	0	0	0	0	183	41-50	123
23:00	2	0	0	0	4	12	41	35	11	1	0	0	0	0	106	41-50	76
Total	383	0	6	24	274	1791	3010	1459	305	78	6	0	0	3	7339		
Percent	5.2%	0.0%	0.1%	0.3%	3.7%	24.4%	41.0%	19.9%	4.2%	1.1%	0.1%	0.0%	0.0%	0.0%			
AM Peak	07:00		11:00	00:00	09:00	07:00	07:00	08:00	11:00	08:00	11:00				07:00		
Vol.	35		2	1	18	106	178	90	28	5	1				427		
PM Peak	15:00		17:00	16:00	17:00	17:00	14:00	15:00	13:00	21:00	14:00			14:00	16:00		
Vol.	50		2	8	40	231	298	118	23	9	1			1	714		
Total	2242	30	57	240	1816	10436	18676	9528	2044	371	47	5	2	9	45503		
Percent	4.9%	0.1%	0.1%	0.5%	4.0%	22.9%	41.0%	20.9%	4.5%	0.8%	0.1%	0.0%	0.0%	0.0%			

15th Percentile :	36 MPH
50th Percentile :	42 MPH
85th Percentile :	47 MPH
95th Percentile :	50 MPH

Stats	
10 MPH Pace Speed :	36-45 MPH
Number in Pace :	29112
Percent in Pace :	64.0%
Number of Vehicles > 45 MPH :	12006
Percent of Vehicles > 45 MPH :	26.4%
Mean Speed(Average) :	41 MPH

DRAFT

All Traffic Data Services, LLC

www.alltrafficdata.net

Site Code: 1

RIO LINDA BLVD N.O MARYSVILLE BLVD

Start	22-Jan-22		23-Jan-22		24-Jan-22		25-Jan-22		26-Jan-22		27-Jan-22		28-Jan-22		Week Average	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	51	54	54	58	43	39	36	45	36	42	47	50	46	37	45	46
01:00	37	64	54	31	29	28	28	23	31	30	30	30	27	24	34	33
02:00	33	20	38	34	25	10	31	16	26	26	32	14	33	11	31	19
03:00	38	37	29	17	43	19	52	26	47	15	40	25	44	35	42	25
04:00	33	23	23	29	73	38	81	35	74	45	73	35	89	46	64	36
05:00	70	42	38	24	233	92	236	85	243	84	233	99	221	81	182	72
06:00	91	103	61	54	347	206	369	213	385	221	372	197	373	209	285	172
07:00	182	136	89	81	**684**	**423**	**645**	**404**	**732**	**414**	**656**	**413**	**662**	**427**	**521**	328
08:00	244	216	216	177	512	365	537	369	536	349	550	348	540	341	448	309
09:00	368	285	359	290	326	307	360	296	372	296	383	295	352	287	360	294
10:00	402	333	375	306	340	315	348	324	339	315	313	289	360	321	354	315
11:00	**442**	**392**	**383**	**352**	342	360	318	354	316	346	340	355	360	409	357	**367**
12:00 PM	**434**	436	322	**459**	343	377	338	317	447	495	378	395	396	392	380	410
01:00	400	444	396	416	402	382	380	400	461	428	392	395	418	469	407	419
02:00	385	468	359	392	473	518	**498**	573	412	533	435	612	474	614	434	530
03:00	383	440	360	367	**484**	650	485	646	**465**	643	**533**	622	**536**	650	**464**	574
04:00	379	**486**	364	406	464	**693**	483	688	406	704	446	**721**	464	**714**	429	**630**
05:00	419	429	**430**	349	442	642	434	**704**	463	**719**	451	687	471	651	444	597
06:00	354	315	293	307	344	398	380	426	376	438	393	459	419	491	366	405
07:00	241	258	251	251	240	312	257	304	292	297	273	289	321	344	268	294
08:00	196	229	187	219	165	209	184	222	232	249	209	245	212	265	198	234
09:00	169	201	126	136	151	135	142	173	140	180	136	202	209	232	153	180
10:00	151	174	96	107	115	112	92	119	93	119	106	107	119	183	110	132
11:00	104	93	66	74	63	73	64	77	55	59	71	77	99	106	75	80
Total	5606	5678	4969	4936	6683	6703	6778	6839	6979	7047	6892	6961	7245	7339	6451	6501
Day	11284		9905		13386		13617		14026		13853		14584		12952	
AM Peak	11:00	11:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	11:00
Vol.	442	392	383	352	684	423	645	404	732	414	656	413	662	427	521	367
PM Peak	12:00	16:00	17:00	12:00	15:00	16:00	14:00	17:00	15:00	17:00	15:00	16:00	15:00	16:00	15:00	16:00
Vol.	434	486	430	459	484	693	498	704	465	719	533	721	536	714	464	630

Comb. Total	11284	9905	13386	13617	14026	13853	14584	12952

ADT ADT 12,951 AADT 12,951

DRAFT

APPENDIX C: "LEISURE VISTAS" BACKGROUND TRAFFIC STUDY

DRAFT

INTRODUCTION

This Transportation and Circulation section discusses existing (2004) and future (2025) transportation and circulation conditions associated with the Leisure Vistas development. The analysis includes consideration of automobile traffic impacts on roadway capacity, transit impacts, bicycle impacts, and pedestrian impacts. Quantitative analyses of a.m. and p.m. peak hour conditions have been conducted for the following scenarios:

- Existing Without Project
- Existing With Project
- Future Without Project
- Future With Project

PROPOSED PROJECT

As illustrated in Figure 1, the project site is located north of Claire Avenue and west of Rio Linda Boulevard in the Robla area of the City of Sacramento. Figure 2 illustrates the proposed site plan.

A total of 915 residential units are proposed, consisting of courtyard units (congregate care facility), assisted living units, and cottage units (attached senior housing). The residential units are proposed to be located on parcels 1, 2, and 3 (see Figure 2). A neighborhood shopping center of 43,000 square feet is proposed on parcel 4 adjacent to Rio Linda Boulevard. Parcel 5 is proposed for development as 3.8 net acres of park.

The proposed site roadway system is illustrated on Figure 2. Access is provided to Rio Linda Boulevard, to Sully Street at the intersection with Claire Avenue, and to Claire Avenue about midway between Sully Street and Rio Linda Boulevard. The site roadway system will provide an indirect connection through the site between Sully Street (at Claire Avenue) and Rio Linda Boulevard. For analysis purposes, it is assumed that Claire Avenue will be completed between Rio Linda Boulevard and Sully Street.

The site roadway system described above is planned with design elements to provide an environment that results in appropriate speeds for a residential development and to minimize through traffic.

ENVIRONMENTAL SETTING

Figure 1 illustrates the roadway system near the project site.

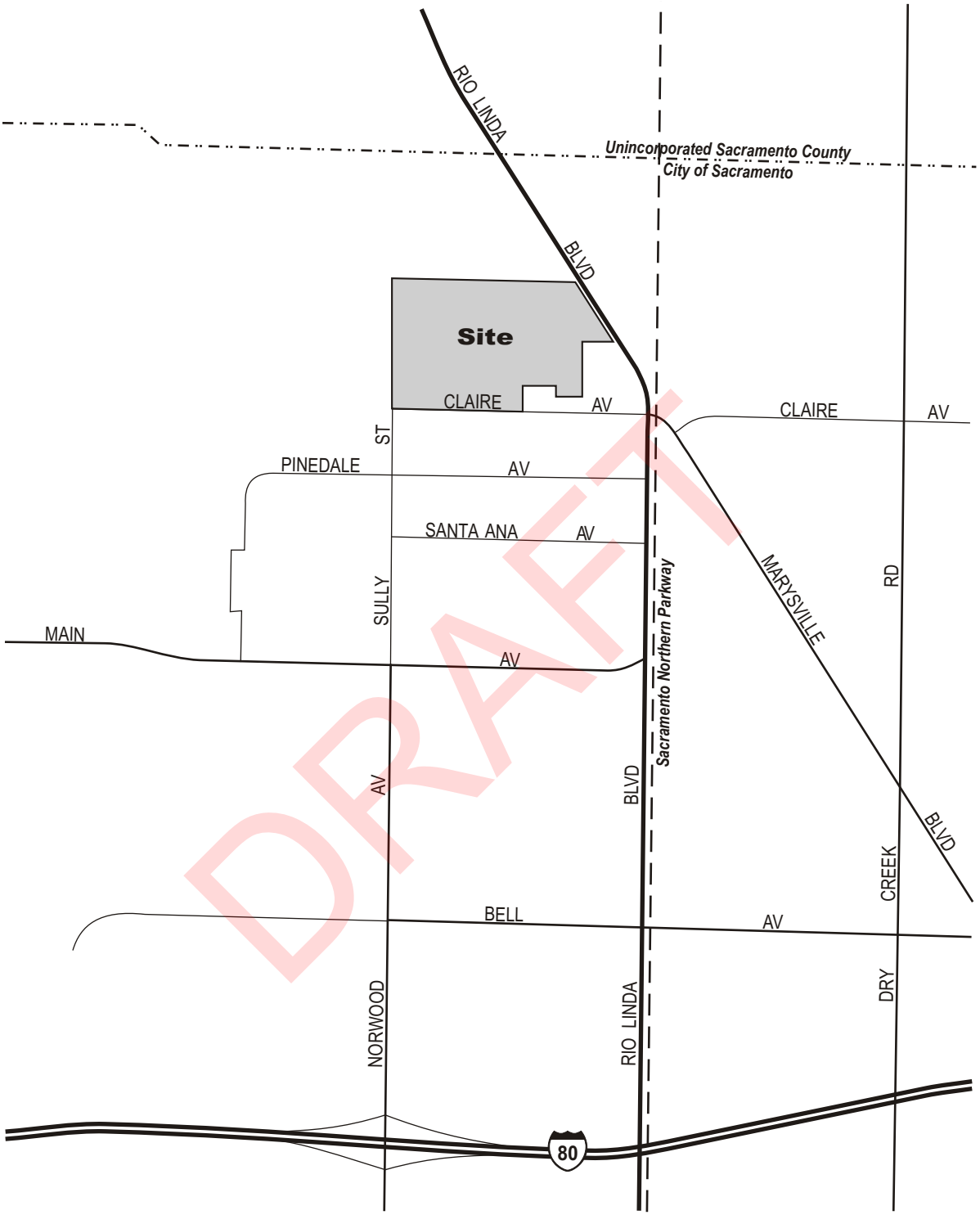
ROADWAY SYSTEM - REGIONAL ACCESS

Regional automobile access to the site is provided primarily by the **I-80** freeway located about 1.4 miles south of the site. I-80 is an east-west interstate freeway extending from San Francisco to the west to New Jersey to the east. I-80 is a six-lane freeway in the site vicinity. To the west, it

DRAFT

DKS *Associates*

TRANSPORTATION SOLUTIONS



DRAFT

LEGEND

— — — - Off-Street Bikeway/Pedestrian System

Figure 1
LOCATION MAP

DKS Associates
TRANSPORTATION SOLUTIONS

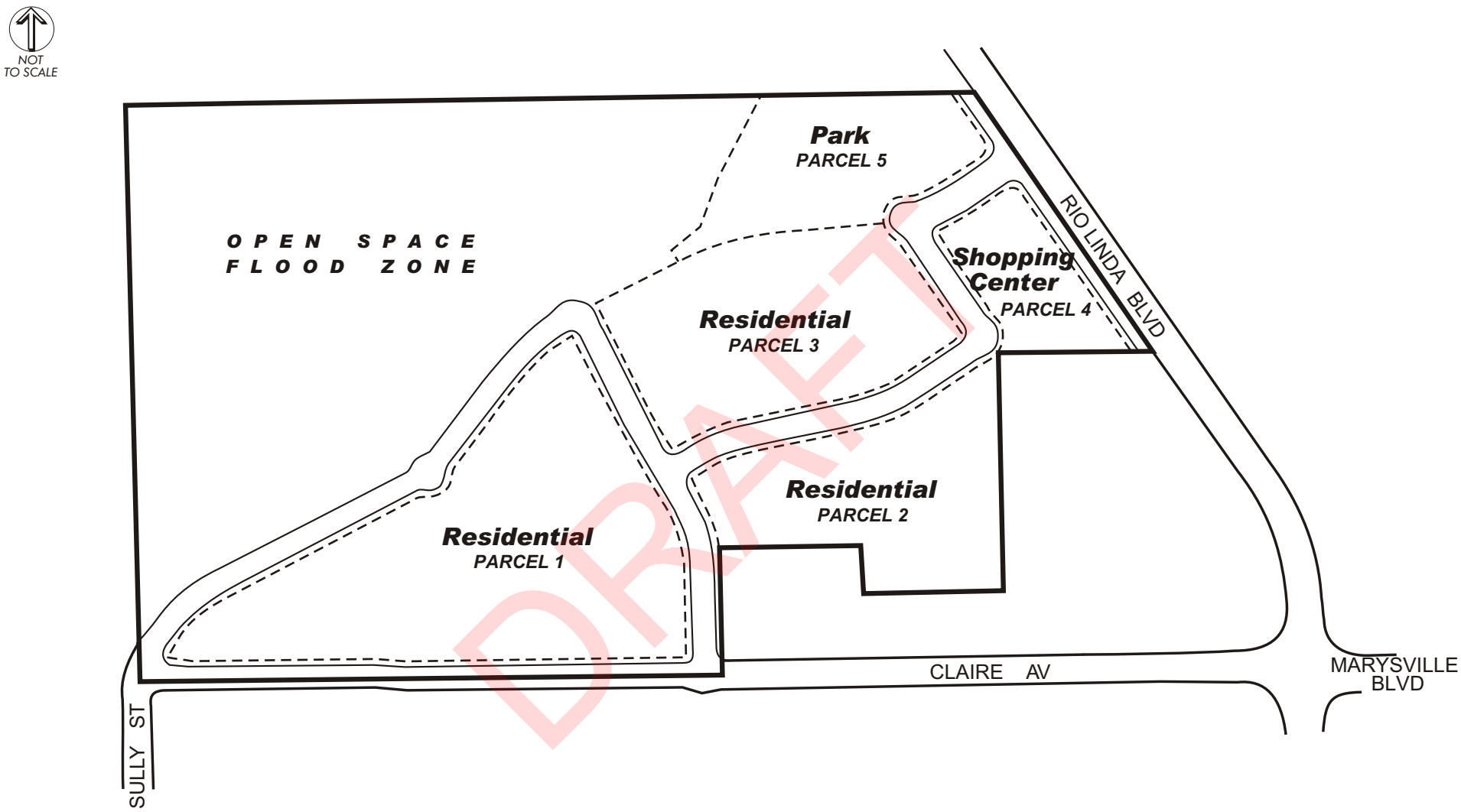


Figure 2
SITE PLAN

provides access to I-5. Near the site, I-80 has full interchanges at Norwood Avenue and at Raley Boulevard.

ROADWAY SYSTEM - LOCAL ACCESS

Direct access to the site is provided via Rio Linda Boulevard, Claire Avenue, and Sully Street. Other roadways providing site access include Norwood Avenue, Main Avenue, Bell Avenue, and Marysville Boulevard.

Rio Linda Boulevard is a north-south roadway that forms the eastern boundary of the site. To the south, Rio Linda Boulevard extends to El Camino Avenue and Del Paso Boulevard in the North Sacramento area of the City of Sacramento. To the north, Rio Linda Boulevard extends to the Rio Linda and Elverta areas of unincorporated Sacramento County. In the site vicinity, Rio Linda Boulevard has one travel lane in each direction. Rio Linda Boulevard has signalized intersections at Claire Avenue / Marysville Boulevard and at Bell Avenue.

Claire Avenue is a two-lane east-west local street. Claire Avenue extends westerly from Rio Linda Boulevard about 1500 feet toward Sully Street. The easterly leg of its intersection with Rio Linda Boulevard is Marysville Boulevard. Claire Avenue also extends easterly from Marysville Boulevard southeast of the intersection of Rio Linda Boulevard.

Sully Street is a two-lane north-south local street. It begins at Main Avenue and extends northerly to the site. The southerly leg of its signalized intersection with Main Avenue is Norwood Avenue.

Norwood Avenue is a north-south roadway that begins at Main Avenue and extends southerly to Grove Avenue in the North Sacramento area of the City of Sacramento. Norwood Avenue provides direct access from the site to I-80. Norwood Avenue has signalized intersections at Main Avenue / Sully Street and at Bell Avenue. North of Bell Avenue, Norwood Avenue has one travel lane in each direction.

Main Avenue is an east-west roadway located about 0.5 miles south of the site. To the west, it becomes Del Paso Road and provides access to the North Natomas area and I-5. To the east, it extends to McClellan Park (the former Air Force Base), interrupted by Magpie Creek immediately east of Rio Linda Boulevard. Main Avenue has one travel lane in each direction between Sully Street / Norwood Avenue and Rio Linda Boulevard. West of Sully Street / Norwood Avenue, it has two travel lanes in each direction.

Bell Avenue is an east-west roadway located about one mile south of the site. To the west, it terminates about 0.6 miles west of Norwood Avenue in a residential area. To the east, it extends to McClellan Park. In the site vicinity, Bell Avenue has one travel lane in each direction.

PEDESTRIAN SYSTEM

Sidewalks are not provided on the roadways immediately adjacent to the site. The Sacramento Northern Parkway, located east of and generally parallel to Rio Linda Boulevard,

DRAFT

follows the former Sacramento Northern Electric Railway right-of-way and provides a pedestrian and bicycle path (see Figure 1).

BICYCLE SYSTEM

A Sacramento City / County Bicycle Task Force developed a 2010 Bikeway Master Plan for the region. The Master Plan is a policy document that was prepared to coordinate and develop a bikeway system that will benefit and serve the recreational and transportation needs of the public. Officially designated bicycle facilities are classified as follows:

Class I: Off-street bike trails or paths which are physically separated from streets or roads used by motorized vehicles.

Class II: On street bike lanes with signs, striped lane markings, and pavement legends.

Class III: On-street bike routes marked by signs and shared with motor vehicles and pedestrians. Optional four-inch edge lines painted on the pavement.

Figure 3 illustrates the bikeway master plan in the site vicinity. The primary existing bikeway near the site is the Sacramento Northern Parkway. The Parkway provides a continuous north-south off-street facility from Rio Linda in unincorporated Sacramento County to north to the American River Parkway to the south. The only other existing bikeway in the immediate site vicinity is an on-street facility on Bell Avenue from Rio Linda Boulevard westerly to Taylor Street.

Both on-street and off-street bikeways are proposed in many locations near the site. The following bikeways would be adjacent to or extend through the project site:

- Claire Avenue – On-street bikeway from Sully Street to Raley Boulevard.
- Rio Linda Boulevard – On-street bikeway northerly from Claire Avenue into unincorporated Sacramento County.
- Rio Linda / Robla Creek - Off-street bikeway from the Natomas East Main Drainage Canal to the Sacramento Northern Parkway.
- Northerly extension of Sully Street – Off-Street bikeway across the Rio Linda / Robla Creek extending into unincorporated Sacramento County.

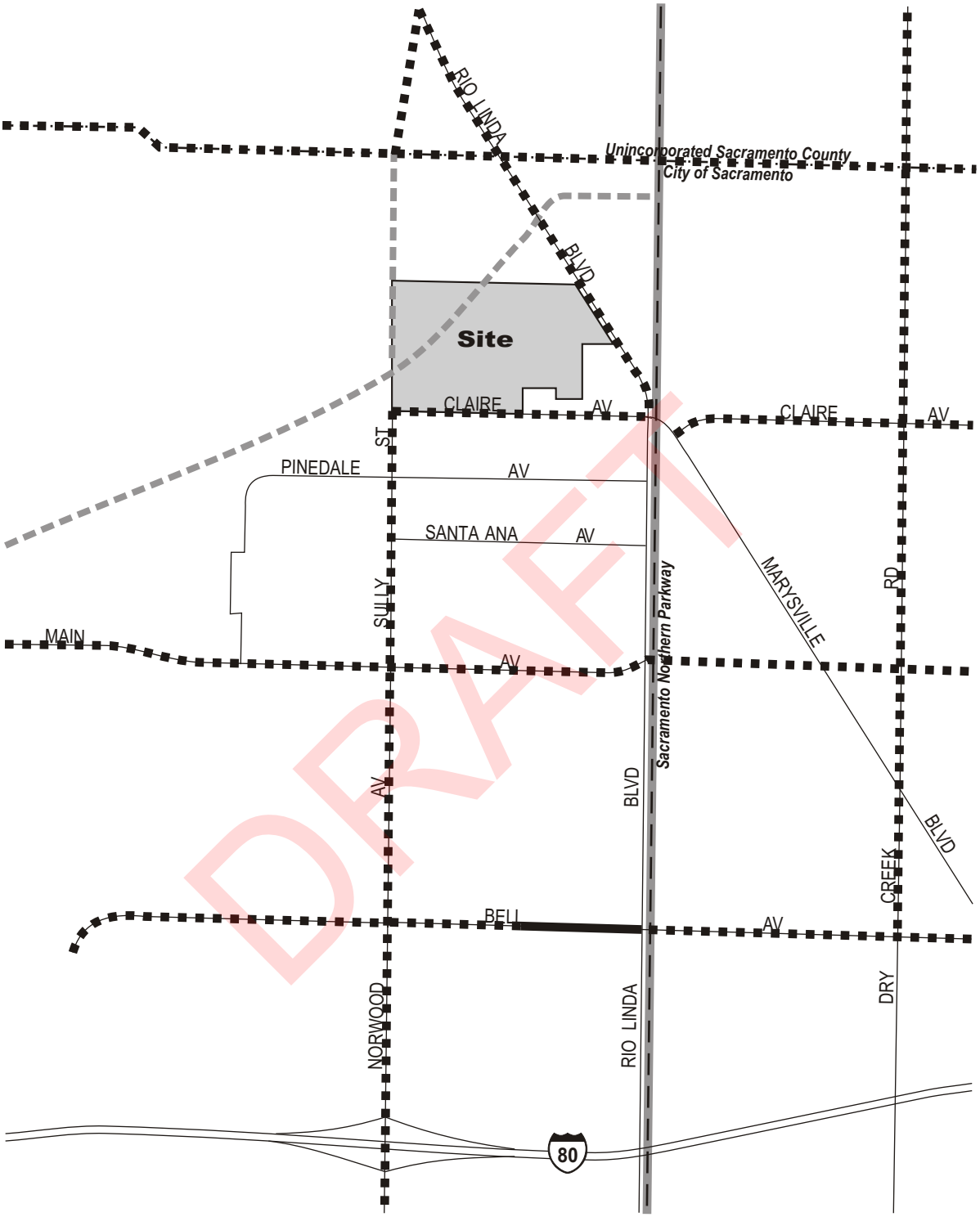
TRANSIT SYSTEM

The Sacramento Regional Transit District (RT) operates 80 bus routes and 26.9 miles of light rail covering a 418 square-mile service area. Buses and light rail run 365 days a year using 76 light rail vehicles, 258 buses powered by compressed natural gas (CNG) and 17 shuttle vans. Buses operate daily from 5:00 a.m. to 11:30 p.m. every 15 to 60 minutes, depending on the route.

DRAFT

DKS *Associates*

TRANSPORTATION SOLUTIONS



LEGEND

- Existing Off-Street
- Existing On-Street
- Proposed Off-Street
- Proposed On-Street

Figure 3
BIKEWAY MASTER PLAN

Light rail trains operate from 4:30 a.m. to 1:00 a.m. daily with service every 15 minutes during the day and every 30 minutes in the evening.

Figure 4 illustrates transit services in the site vicinity. The two RT bus routes operating closest to the site are Routes 14 and 19. Near the site, Route 14 operates on Main Avenue west of Norwood Avenue and Norwood Avenue south of Main Avenue. Route 14 serves North Natomas to the west and North Sacramento to the south. It provides access to the Arden / Del Paso Light Rail Station. Route 19 operates on Claire Avenue east of Marysville Boulevard and Rio Linda Boulevard south of Claire Avenue. Route 19 serves North Sacramento, Rio Linda, Elverta, North Highlands, and McClellan Park. It provides access to the Arden / Del Paso and Watt / I-80 Light Rail Stations.

STUDY AREA

For traffic analysis purposes, a set of intersections and roadway segments were selected based upon the anticipated volume of project traffic, the distributional patterns of project traffic, and known locations of operational difficulty. The following locations, illustrated in Figure 5, were identified:

- Intersections

  1. Norwood Avenue and Bell Avenue (signalized)
  2. Rio Linda Boulevard and Bell Avenue (signalized)
  3. Norwood Avenue / Sully Street and Main Avenue (signalized)
  4. Rio Linda Boulevard and Main Avenue (unsignalized)
  5. Rio Linda Boulevard and Claire Avenue / Marysville Boulevard (signalized)
  6. Sully Street / Site Roadway and Claire Avenue (unsignalized)
  7. Rio Linda Boulevard and Site Roadway (unsignalized)

- Roadway Segments

  1. Bell Avenue West of Rio Linda Boulevard
  2. Main Avenue West of Rio Linda Boulevard
  3. Marysville Boulevard North of Main Avenue
  4. Norwood Avenue North of Bell Avenue
  5. Norwood Avenue South of Bell Avenue
  6. Rio Linda Boulevard North of Ascot Avenue
  7. Rio Linda Boulevard North of Bell Avenue
  8. Rio Linda Boulevard North of Claire Avenue
  9. Rio Linda Boulevard North of Main Avenue

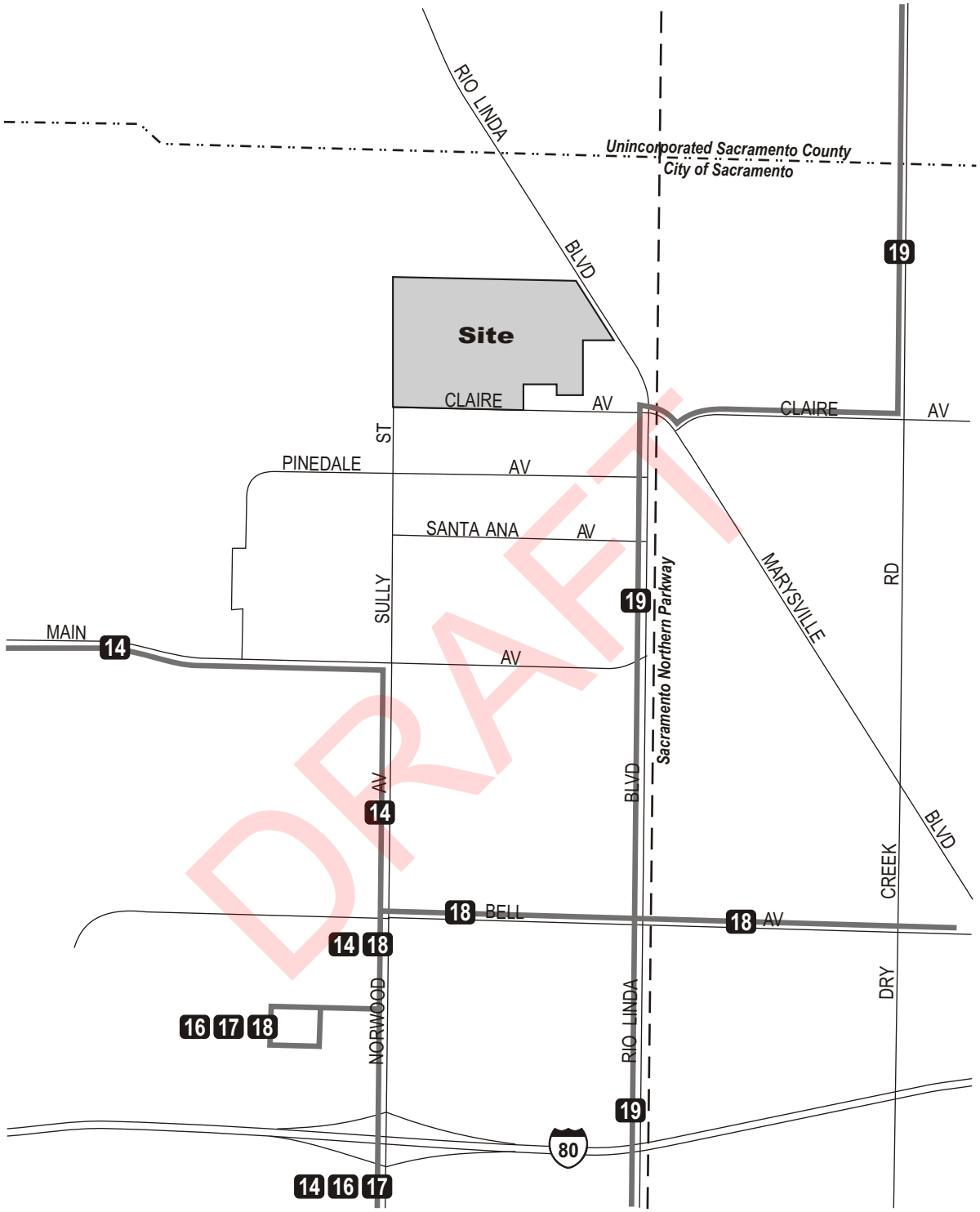
REGULATORY SETTING

Roadway operations are regulated by agencies with jurisdiction of the particular roadway. All study area roadways are under the jurisdiction of the City of Sacramento.

DRAFT

DKS *Associates*

TRANSPORTATION SOLUTIONS



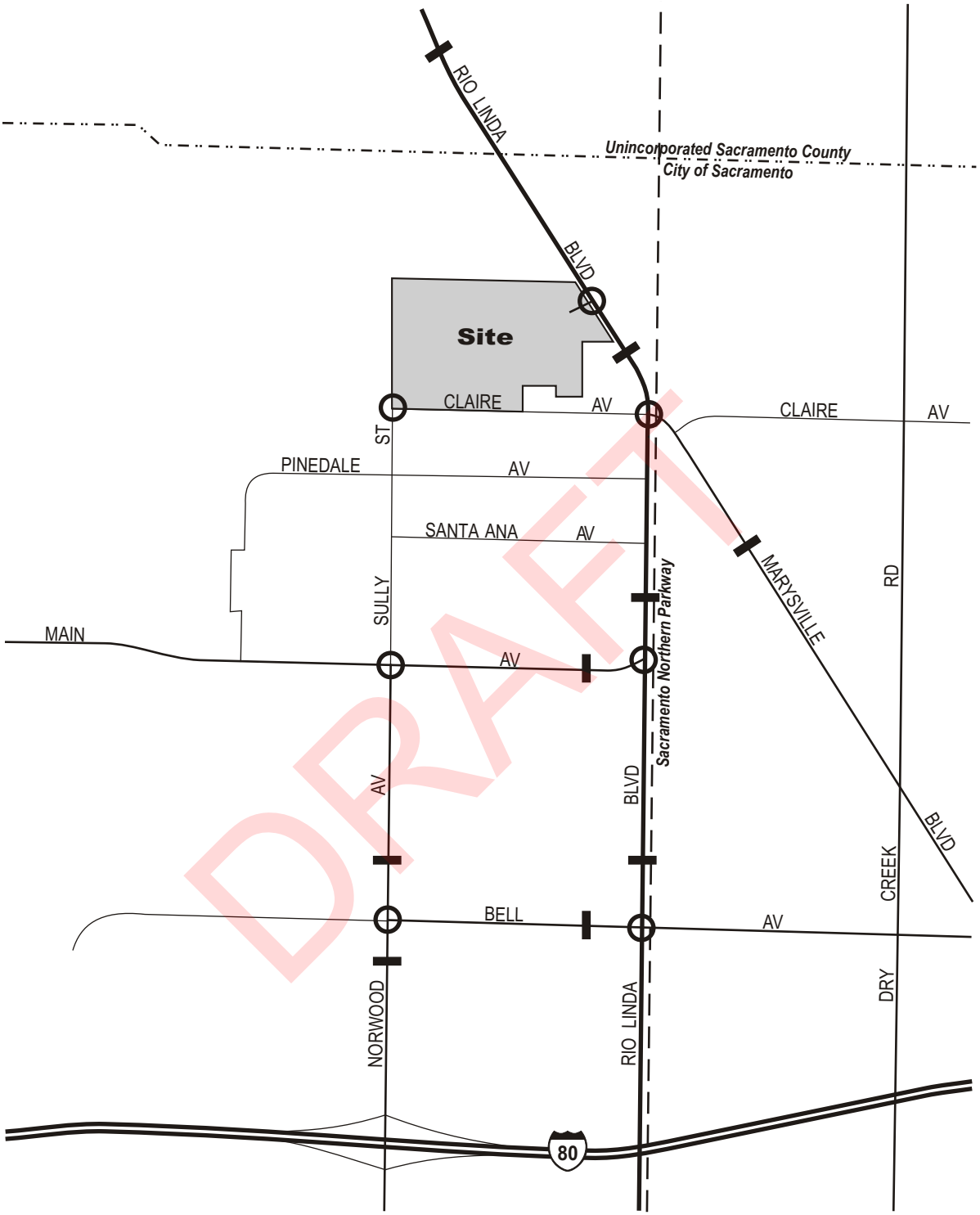
LEGEND

00 - Regional Transit Bus Route

Figure 4
EXISTING TRANSIT ROUTES

DKS *Associates*

TRANSPORTATION SOLUTIONS



DRAFT

LEGEND

- O - Study Intersection
- ▬ - Roadway Segment

Figure 5
STUDY AREA

EXISTING TRAFFIC CONDITIONS

EXISTING PEAK-HOUR TRAFFIC VOLUMES

The existing traffic volumes at the study area intersections were counted during the a.m. and p.m. commuter periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) on Wednesday June 9, 2004. Peak hour intersection traffic volume data is illustrated in Figures 6 and 7.

EXISTING DAILY TRAFFIC VOLUMES

Daily traffic volumes were recorded on the nine study area roadway segments on Wednesday June 9 or Tuesday June 15, 2004. Daily traffic volume data is summarized in Figure 8 and Table 1.

METHODOLOGY

Field reconnaissance was undertaken to ascertain the traffic control characteristics of each of the study area intersections and roadway segments. Figure 9 illustrates existing intersection geometry. Determination of roadway operating conditions is based upon comparison of known or projected traffic volumes during peak hours to roadway capacity. In an urban setting, roadway capacity is generally governed by intersection characteristics, and intersection delay is used to determine "levels of service." Levels of service describe roadway operating conditions. Level of service is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, delay, and operating costs. Levels of service are designated "A" through "F" from best to worst, which cover the entire range of traffic operations that might occur. Levels of Service (LOS) "A" through "E" generally represent traffic volumes at less than roadway capacity, while LOS "F" represents over capacity and / or forced flow conditions.

The City of Sacramento General Plan includes a goal of maintaining LOS "C" throughout the roadway network. Because of the constraints of existing development in the City, and because of other environmental concerns, this goal cannot always be met.

DRAFT

Intersection Analysis

Intersection analyses were conducted using a methodology outlined in the Transportation Research Board's Special Report 209, *Highway Capacity Manual*, 2000. The methodology utilized is known as "operational analysis." This procedure calculates an average control delay per vehicle at an intersection, and assigns a level of service designation based upon the delay. The method also provides a calculation of the volume-to-capacity (v/c) ratio of the critical movements at signalized intersections. Tables 2 and 3 present the level of service criteria for signalized and unsignalized intersections, respectively.

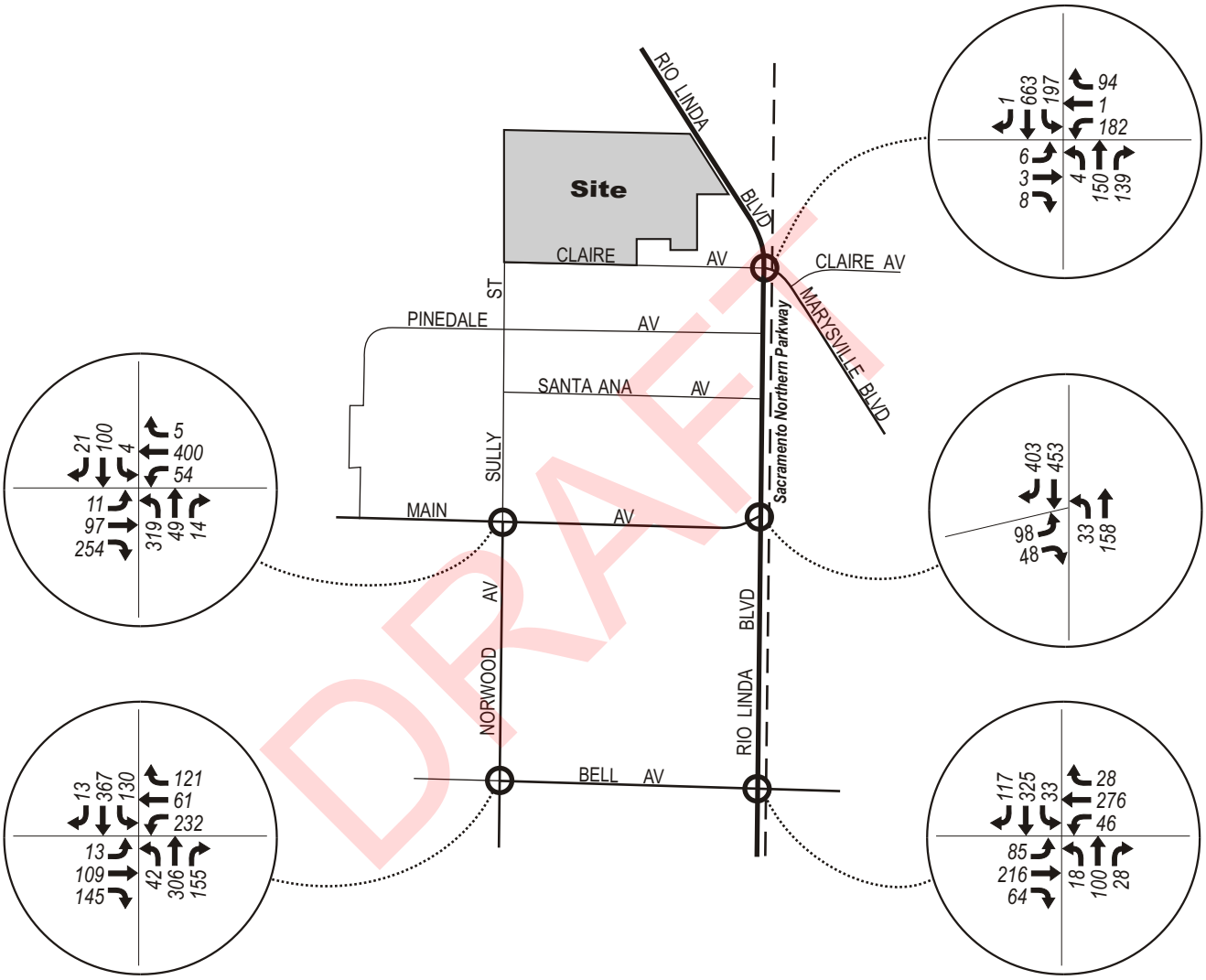
Traffic Signal Warrant Analysis

Study area unsignalized intersections were evaluated to determine if traffic signals are appropriate under year 2004 or 2025 conditions, with or without the project. The investigation of the need for a

DKS *Associates*

TRANSPORTATION SOLUTIONS

NOT TO SCALE



DRAFT

LEGEND

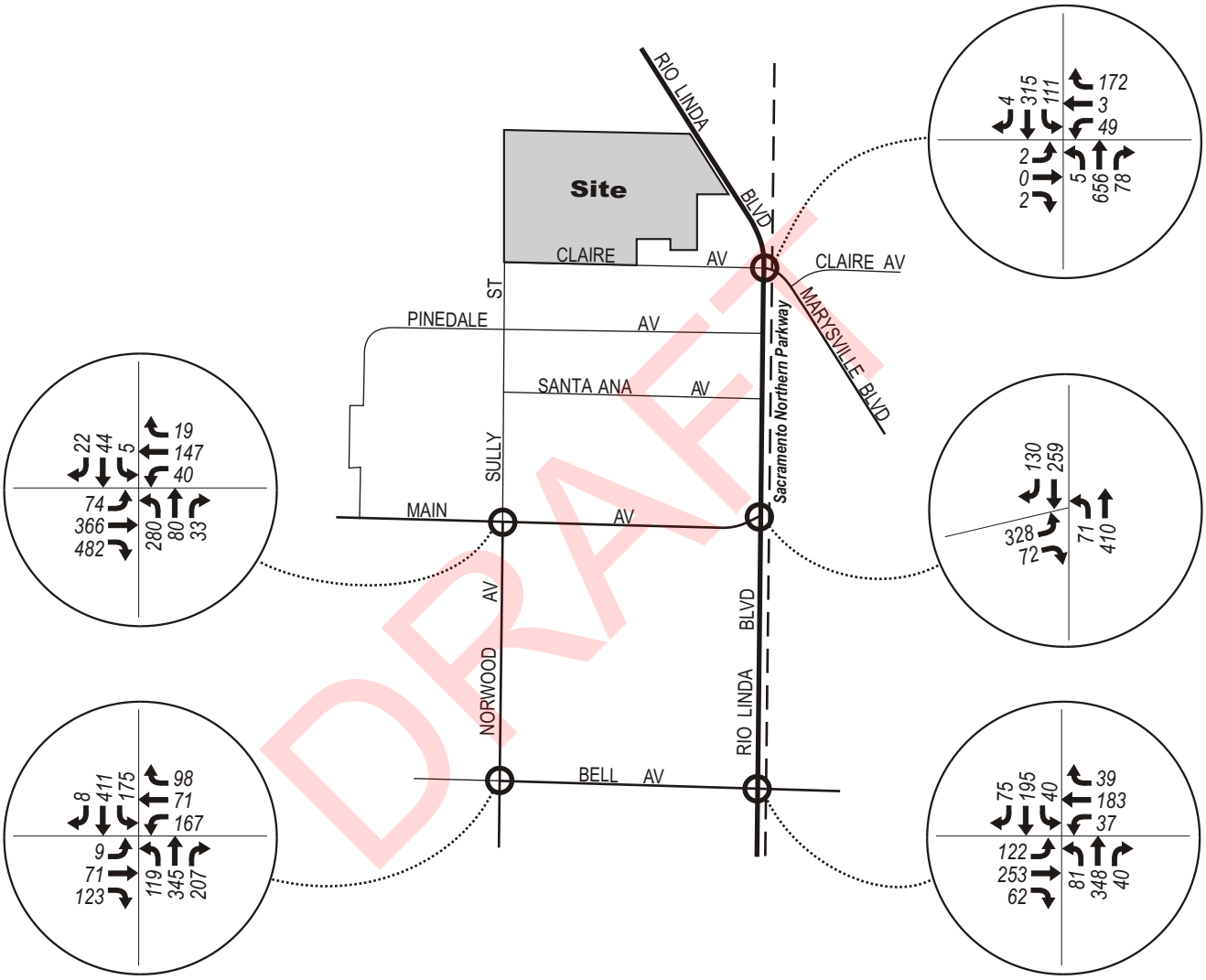
O - Study Intersection

00 - Peak Hour Traffic Volume

Figure 6
EXISTING AM PEAK HOUR INTERSECTION VOLUMES

DKS *Associates*
TRANSPORTATION SOLUTIONS

NOT TO SCALE



DRAFT

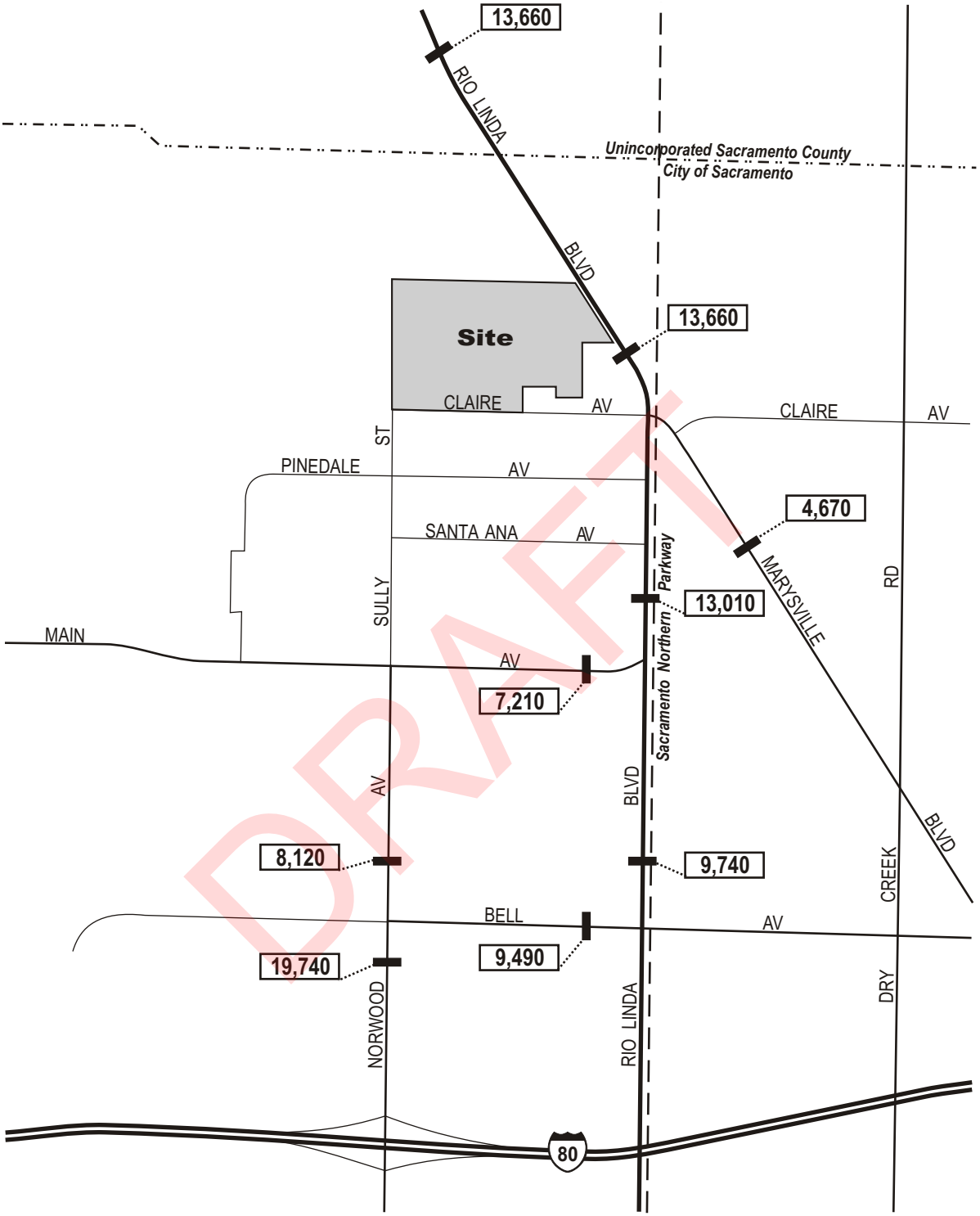
LEGEND

O - Study Intersection

00 - Peak Hour Traffic Volume

Figure 7
EXISTING PM PEAK HOUR INTERSECTION VOLUMES

DKS *Associates*
TRANSPORTATION SOLUTIONS



LEGEND

- Roadway Segment

1,000 - 2004 Existing

Figure 8
EXISTING DAILY TRAFFIC VOLUMES

TABLE 1
EXISTING DAILY TRAFFIC VOLUMES

Roadway	Location	Volume
Bell Avenue	West of Rio Linda Boulevard	9,490
Main Avenue	West of Rio Linda Boulevard	7,210
Marysville Boulevard	North of Main Avenue	4,670
Norwood Avenue	North of Bell Avenue	8,120
	South of Bell Avenue	19,740
Rio Linda Boulevard	North of Ascot Avenue	13,660
	North of Bell Avenue	9,740
	North of Claire Avenue	13,660
	North of Main Avenue	13,010

Source: *DKS Associates, 2005.*

traffic signal is commonly referred to as "warrant analysis." This study specifically considered Warrant 3, Peak Hour, as defined by the Federal Highway Administration's *Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, 2003 Edition*, and as modified by Caltrans' *MUTCD 2003 California Supplement*. Warrant 3 includes two parts – A and B. Part A considers side street delay, number of traffic lanes, number of intersection approaches, and peak hour traffic volumes. Part B considers community size, major street travel speed, number of traffic lanes, and peak hour traffic volumes. If the criteria of either Part A or Part B are met, then a traffic signal is warranted.

RESULTS OF PEAK HOUR ANALYSIS

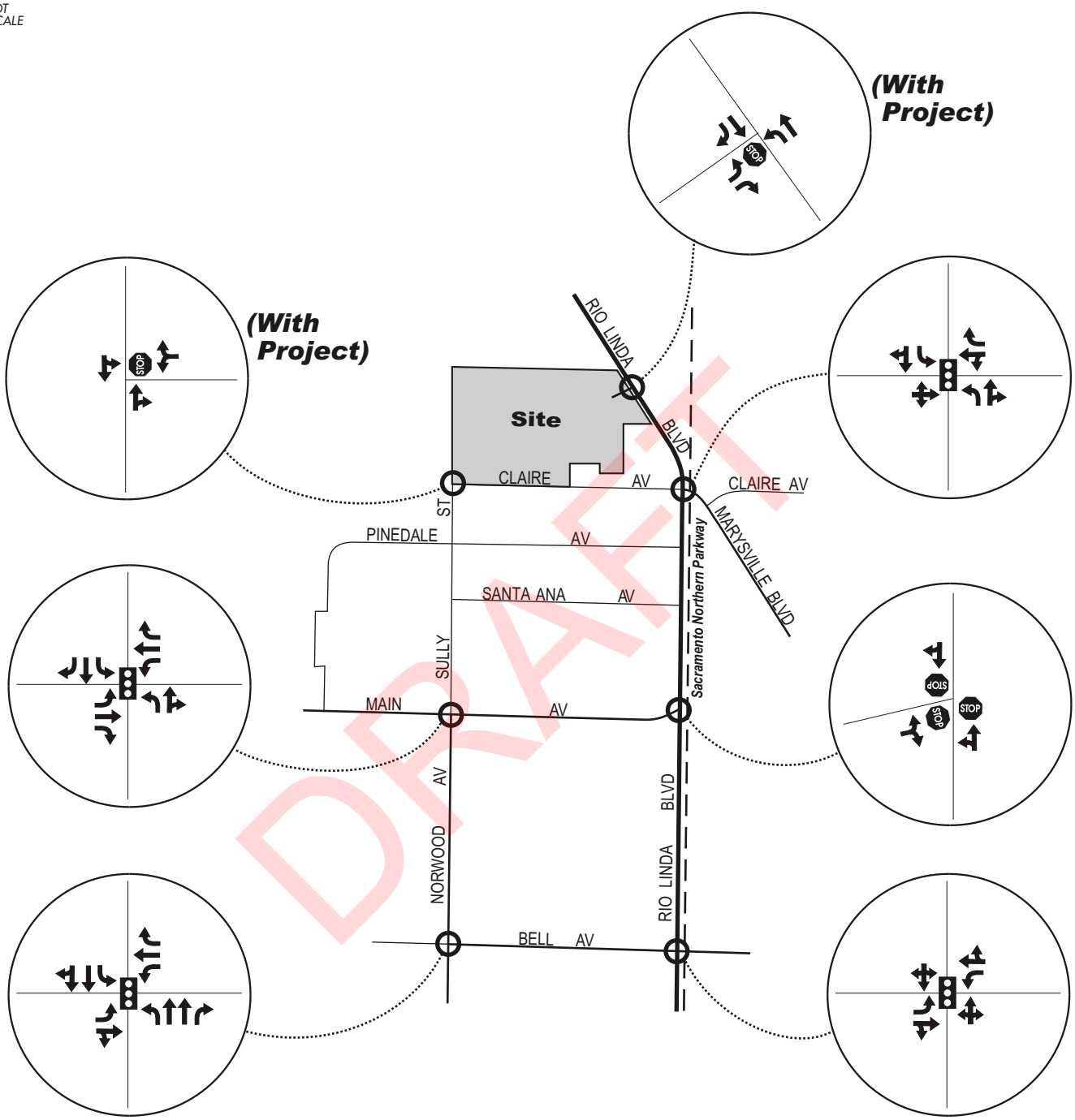
Intersection Operations

Table 4 summarizes the existing a.m. and p.m. peak hour operating conditions at the study area intersections. At unsignalized intersections, the average intersection level of service is utilized to determine conformity with the City's goal. Individual movements may operate at worse levels service. All of the intersections currently meet the City's level of service "C" goal with the exception of the unsignalized intersection of Rio Linda Boulevard and Main Avenue. This intersection operates at LOS "E" in the a.m. peak hour.

DRAFT

DKS *Associates*

TRANSPORTATION SOLUTIONS



LEGEND

- Study Intersection
- Traffic Lanes (Approach)
- Traffic Signal
- Stop Control

Figure 9
EXISTING
INTERSECTION GEOMETRY

TABLE 2
LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

Level of Service (LOS)	Control Delay Per Vehicle (seconds)	Description
A	≤ 10.0	Very low control delay. Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	Generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS "A," causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	> 80.0	This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: *Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 2000.*

DRAFT

Traffic Signal Warrant Analysis

Traffic signal warrant analysis was conducted at the unsignalized intersection of Rio Linda Boulevard and Main Avenue. Traffic signal warrants are a series of criteria that should be met before a traffic signal is installed. Utilizing the peak hour warrant, this intersection warrants a traffic signal.

TABLE 3 LEVEL OF SERVICE CRITERIA UNSIGNALIZED INTERSECTIONS	
Level of Service (LOS)	**Total Delay Per Vehicle (seconds)**
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50
Source: *Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 2000.*	

TABLE 4
EXISTING INTERSECTION OPERATING CONDITIONS

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay (Seconds)	LOS	Delay (Seconds)
Norwood Avenue and Bell Avenue (signalized)	B	19.5	B	18.5
Rio Linda Boulevard and Bell Avenue (signalized)	B	10.5	B	10.2
Norwood Ave. / Sully St. and Main Ave. (signalized)	B	17.8	B	14.0
Rio Linda Boulevard & Main Avenue (all-way stop)	E	44.4	C	22.2
Rio Linda Boulevard & Claire Avenue / Marysville Boulevard (signalized)	A	8.1	A	7.2
Source: DKS Associates, 2005.				

DRAFT

IMPACTS AND MITIGATION

METHOD OF ANALYSIS

This analysis assumes that the traffic associated with the project is fully additive to other traffic on the roadway system. For the existing with project scenario, full development of the project is assumed to occur "instantaneously." In this manner, the traffic and impacts associated with the project can be directly compared to known and measured existing conditions. For the future scenarios, traffic associated with full development of the project has been added to year 2025 traffic

on the roadway system. The year 2025 forecasts were developed through use of the regional SACMET travel model. The regional travel model encompasses the entire Sacramento region, and forecasts peak hour and daily traffic volumes based upon projections of future land use and transportation networks throughout the region.

Trip Generation

Trip generation of the proposed project is based upon information on trip generation compiled by the Institute of Transportation Engineers (*Trip Generation, Seventh Edition*).

Residential Uses

As shown in Table 5, 915 residential units are proposed, consisting of courtyard units (congregate care facility), assisted living units, and cottage units (attached senior adult housing). The residential uses are proposed to be located on parcels 1, 2, and 3 (see Figure 2). These uses are anticipated to generate 65 vehicle trips during the a.m. peak commuter hour, 159 trips during the p.m. peak commuter hour, and 1,873 trips daily.

TABLE 5
RESIDENTIAL USES VEHICULAR TRIP GENERATION

Land Use	ITE Land Use (Code)	Units	Vehicle Trips						
			A.M. Peak Hour			P.M. Peak Hour			Daily
			Entering	Exiting	Total	Entering	Exiting	Total	
Courtyard Units	Congregate Care Facility (253)	753	27	19	45	70	58	128	1,521
Assisted Living	Assisted Living (254)	122	11	6	17	12	15	27	212
Cottage Units	Senior Adult Housing – Attached (252)	40	1	2	3	3	2	4	139
Residential Uses Subtotal		*915*	*39*	*26*	*65*	*85*	*74*	*159*	*1,873*

Source: DKS Associates, 2005, based on Trip Generation, Seventh Edition.

Neighborhood Shopping Center

A neighborhood shopping center of 43,000 square feet is proposed on parcel 4 adjacent to Rio Linda Boulevard. As shown in Table 6, the project is anticipated to generate 94 vehicular trips during the a.m. peak hour, 359 vehicular trips during the p.m. peak hour, and 3,959 trips daily.

DRAFT

TABLE 6
NEIGHBORHOOD SHOPPING CENTER VEHICULAR TRIP GENERATION

Trip Type	Percentage	Vehicle Trips						
		A.M. Peak Hour			P.M. Peak Hour			Daily
		Entering	Exiting	Total	Entering	Exiting	Total	
New Trips	66%	38	24	62	114	123	237	2,613
Pass-By Trips	34%	20	13	32	59	63	122	1,346
Shopping Center Subtotal	*100%*	*58*	*37*	*94*	*172*	*187*	*359*	*3,959*

Source: DKS Associates, 2005, based on Trip Generation, Seventh Edition, ITE Land Use Code 820.

Typically, the total vehicular trips recorded at shopping centers are based on counts taken at the driveways to a center. Studies have found that a significant number of the vehicles entering the driveways of a shopping center would already be on the adjacent roadway, making a different trip. "Pass-by trips" are vehicle trips already traveling on the adjacent roadway system that are diverted into and out of the driveways serving the shopping center. Based upon data collected by ITE, the average number of pass-by trips at a shopping center is 34 percent during the p.m. peak hour. Data is not available for the a.m. peak hour or on a daily basis. The 34 percent factor was applied to the shopping center's trip generation for all time periods. In the traffic analysis, new (not pass-by) trips are assigned to the roadway network in accordance with the trip distribution. Pass-by trips are assigned at the driveway locations together with the new trips.

Summary

Table 7 summarizes the total trip generation associated with the project. The proposed park use on Parcel 5 is expected to generate a minimal number of trips.

No reduction in trip generation has been made for "internal" trips between the residential and retail portions of the project. Of the total number of shopping center vehicular trips, it is anticipated that a very small percentage would be generated by the residential portion of the project.

Baseline Project Traffic Volumes

Traffic impact studies often consider the traffic of other development projects in the site vicinity if such projects have been approved and are under construction or have a high probability of implementation. There were no known baseline projects within the study area at the time this analysis commenced.

DRAFT

TABLE 7
LEISURE VISTAS VEHICULAR TRIP GENERATION

Land Use	Vehicle Trips						
	A.M. Peak Hour			P.M. Peak Hour			Daily
	Entering	Exiting	Total	Entering	Exiting	Total	
Residential	39	26	65	85	74	159	1,873
Shopping Center (new trips only)	38	24	62	114	123	237	2,613
Project Total	*77*	*50*	*127*	*199*	*197*	*396*	*4,486*

Source: DKS Associates, 2005, based on Trip Generation, Seventh Edition.

Trip Distribution and Assignment

The distribution of trips associated with the project was derived utilizing the regional SACMET travel model, observations of travel patterns near the site, and knowledge of the proposed access locations associated with the project. Separate distributions were developed for residential and retail uses, and for existing (2004) and future (2025) conditions. The difference in the project trip distribution for existing and future conditions is due to changes in land use, transportation networks, and roadway travel times over time. Figures 10 and 11 illustrate the traffic distributions for the residential and shopping center uses, respectively. The shopping center trip distribution illustrated in Figure 11 is for new trips only; shopping center pass-by trips are re-routed from through traffic volumes on Rio Linda Boulevard and added to the new-trips for development of total trips to be assigned to the site roadways.

The retail component of the project has frontage along Rio Linda Boulevard. For analysis purposes, it was assumed that direct retail parcel access to Rio Linda Boulevard would be limited to right-in / right-out movements. Full access to all project components is provided via the intersection of Rio Linda Boulevard and the Site Roadway.

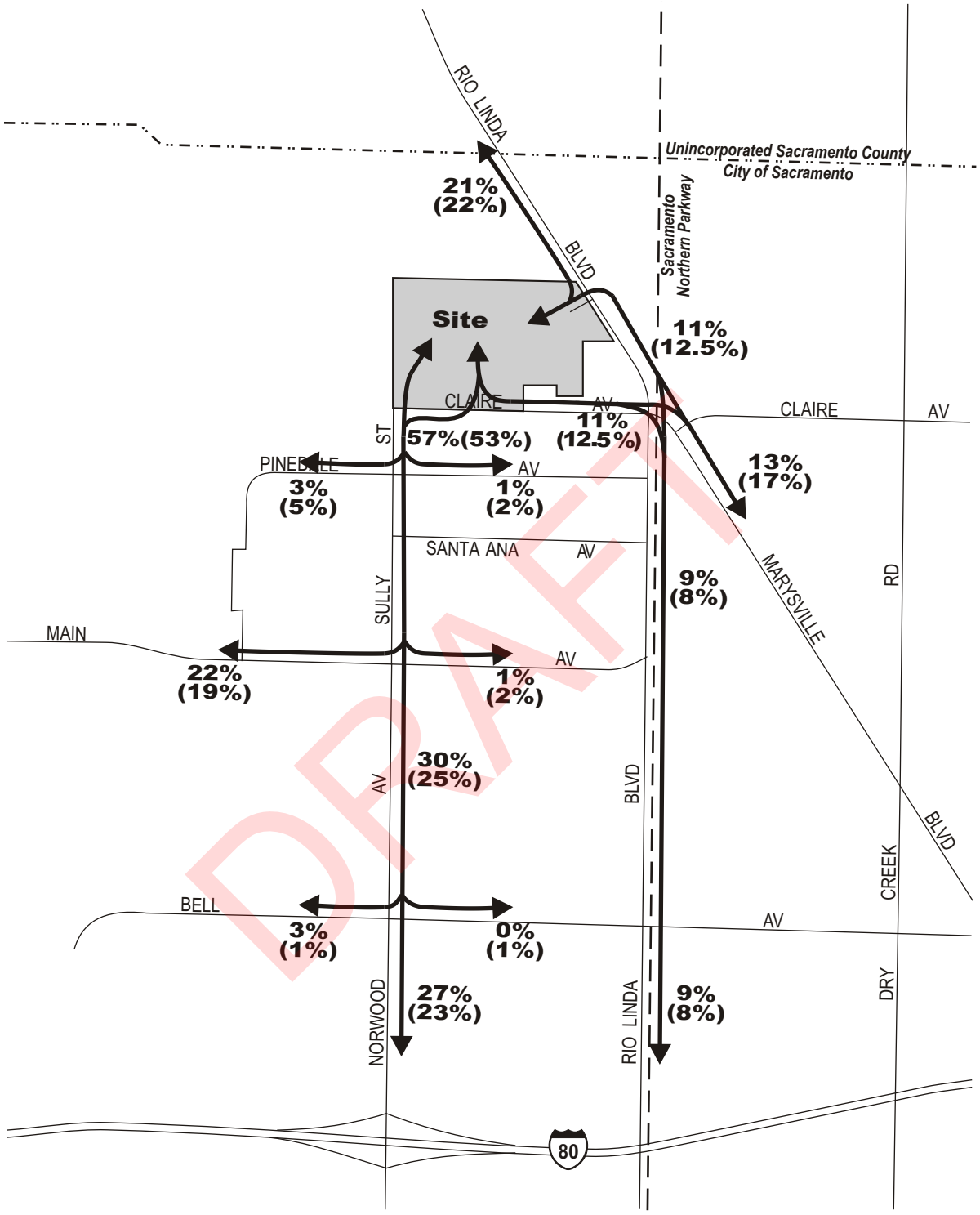
The project trip generation volumes and trip distribution patterns are utilized to assign vehicle trips to the study area roadway network. Figures 12 and 13 show the project only traffic volumes on study area roadways for the existing (2004) and future (2025) scenarios respectively.

Future (Year 2025) Traffic Volume Forecasts

Year 2025 traffic volume forecasts without the project were developed through utilization of SACOG's regional SACMET travel model. Figures 14 and 15 illustrate future peak hour volumes at the study area intersections. Figure 16 and Table 8 show future daily traffic volumes.

DRAFT

DKS *Associates*
TRANSPORTATION SOLUTIONS



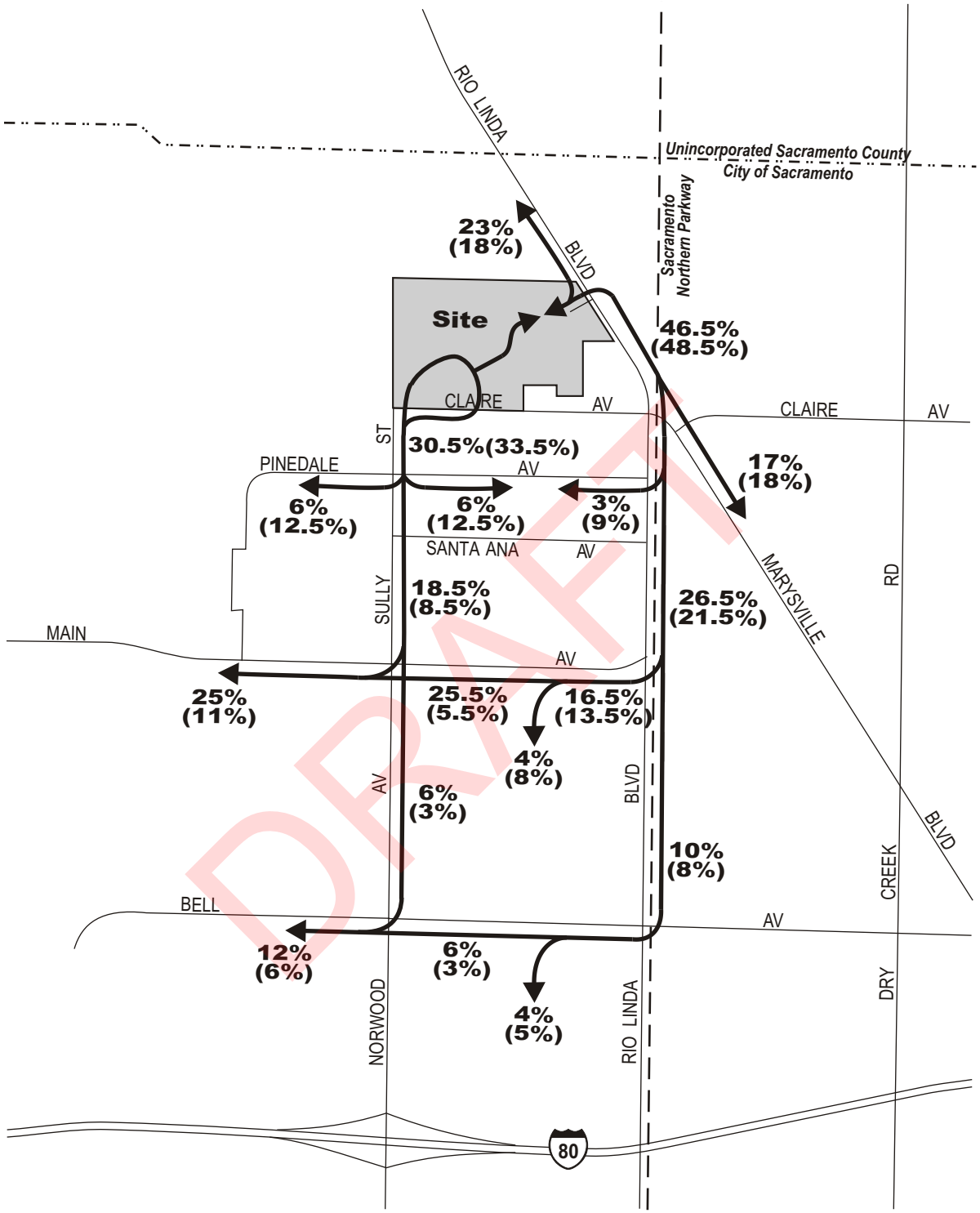
DRAFT

LEGEND

00% - 2004
(00%) - 2025

Figure 10
TRIP DISTRIBUTION
RESIDENTIAL

DKS *Associates*
TRANSPORTATION SOLUTIONS



LEGEND

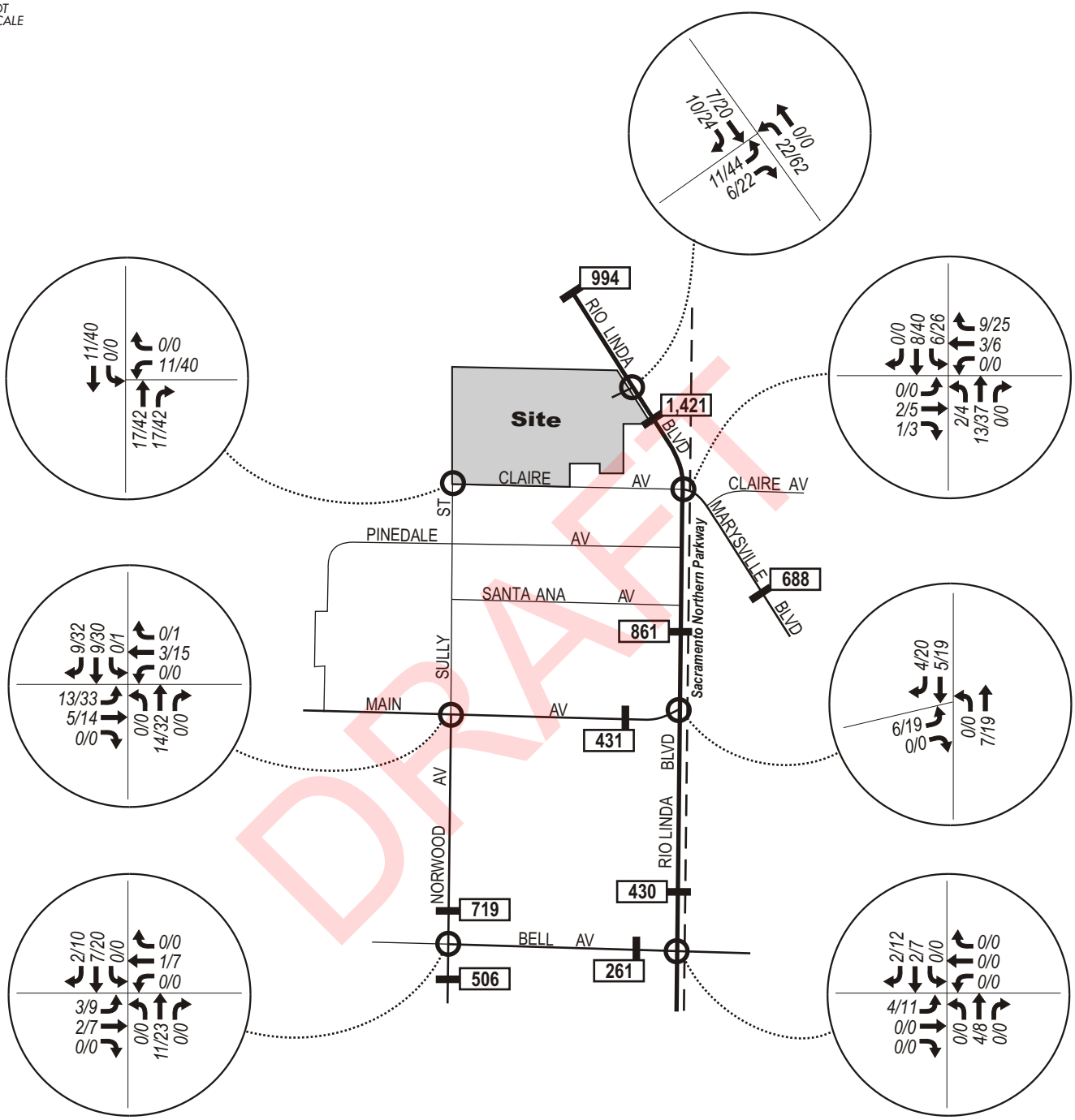
00% - 2004
(00%) - 2025

Note: New Trips Only.
Does Not Include Diverted Pass-by Trips.

Figure 11
TRIP DISTRIBUTION
NEIGHBORHOOD SHOPPING CENTER

DKS *Associates*

TRANSPORTATION SOLUTIONS

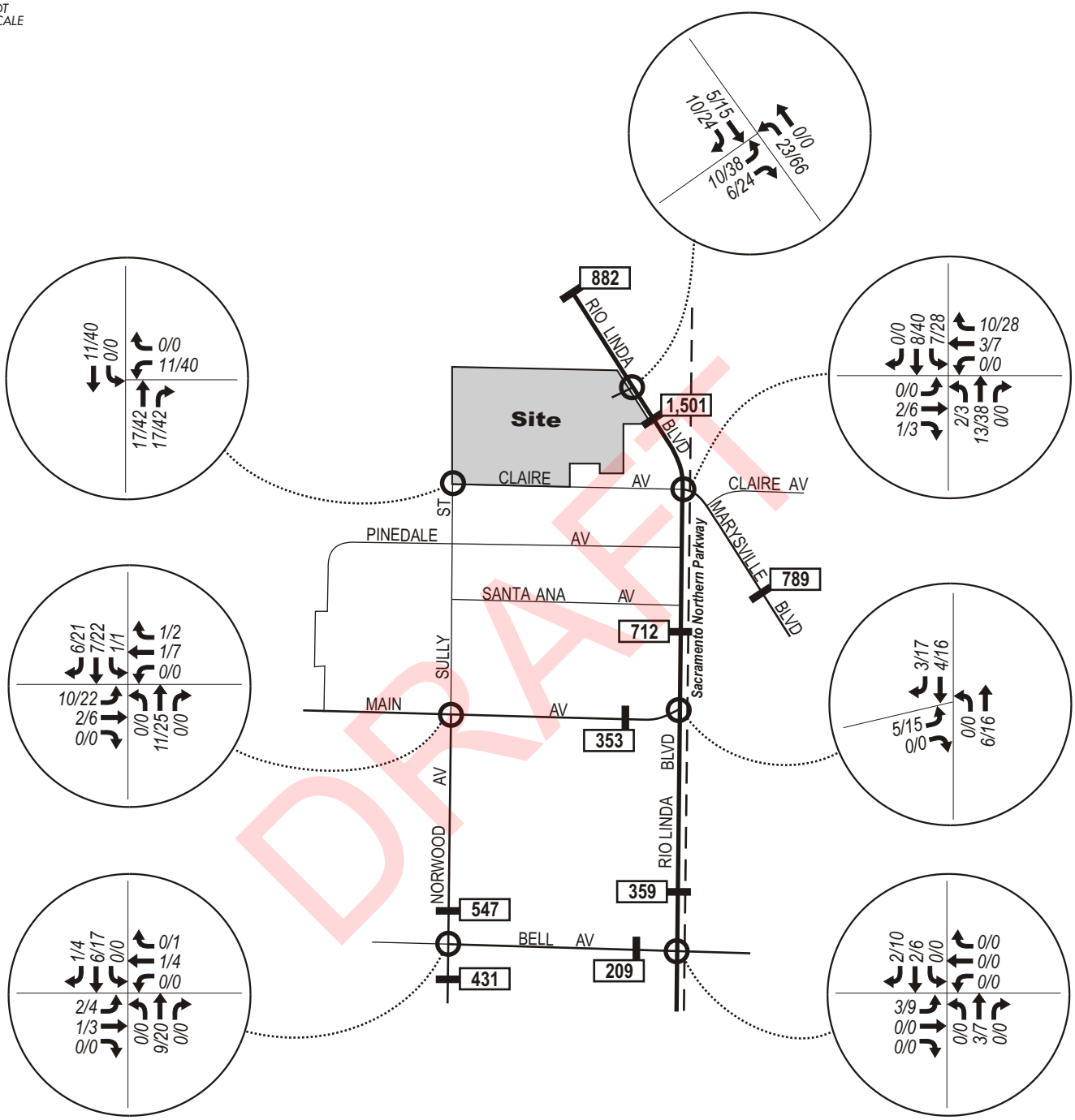


LEGEND

- O - Study Intersection
- ← *AM/PM* - Peak Hour Traffic Volume
- 0,000 - Daily Segment Volume

Figure 12
YEAR 2004
PROJECT TRAFFIC VOLUMES

DKS *Associates*
TRANSPORTATION SOLUTIONS



DRAFT

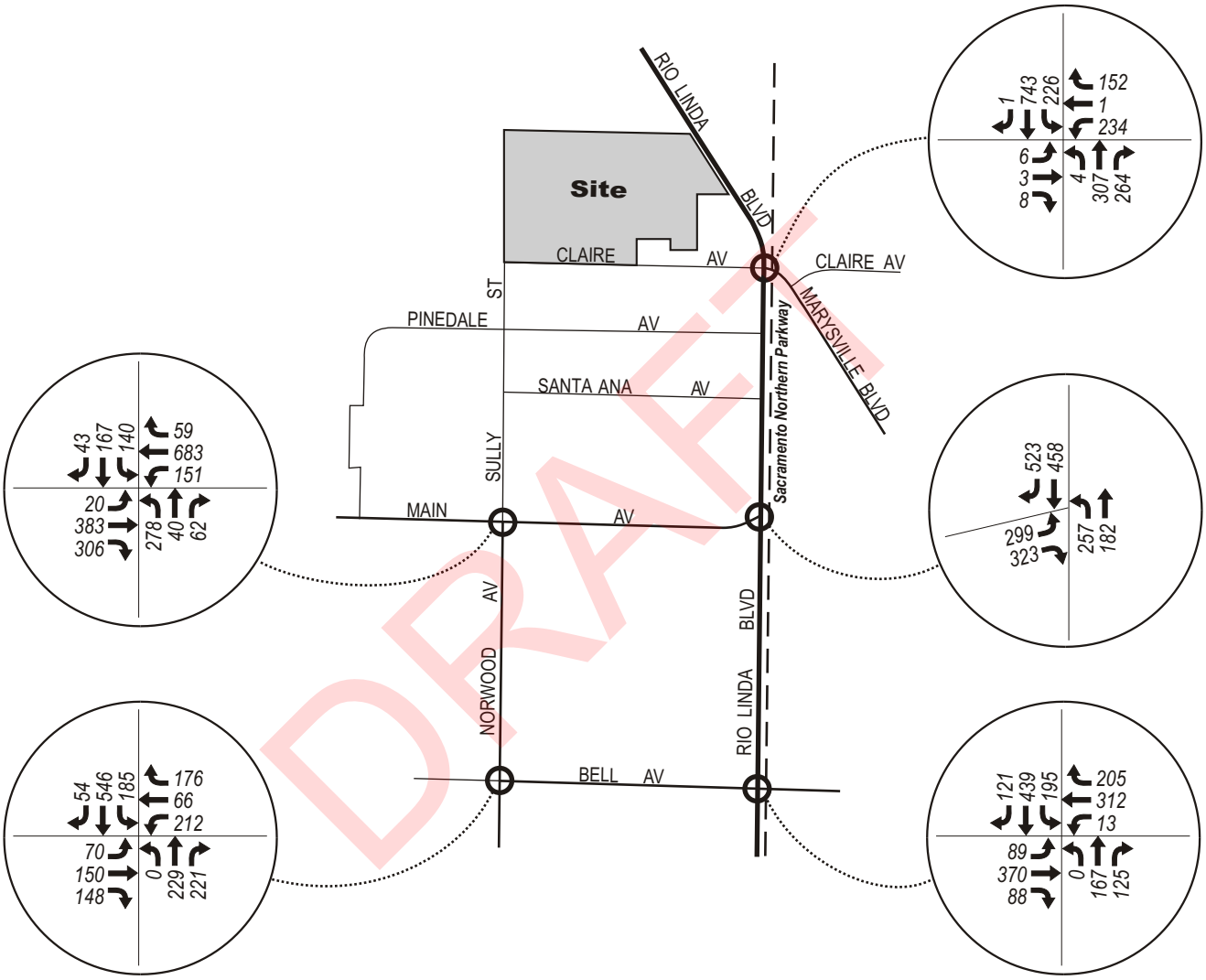
LEGEND

- O - Study Intersection
- ← *AM/PM* - Peak Hour Traffic Volume
- 0,000 - Daily Segment Volume

Figure 13
YEAR 2025
PROJECT TRAFFIC VOLUMES

DKS *Associates*
TRANSPORTATION SOLUTIONS

NOT TO SCALE



LEGEND

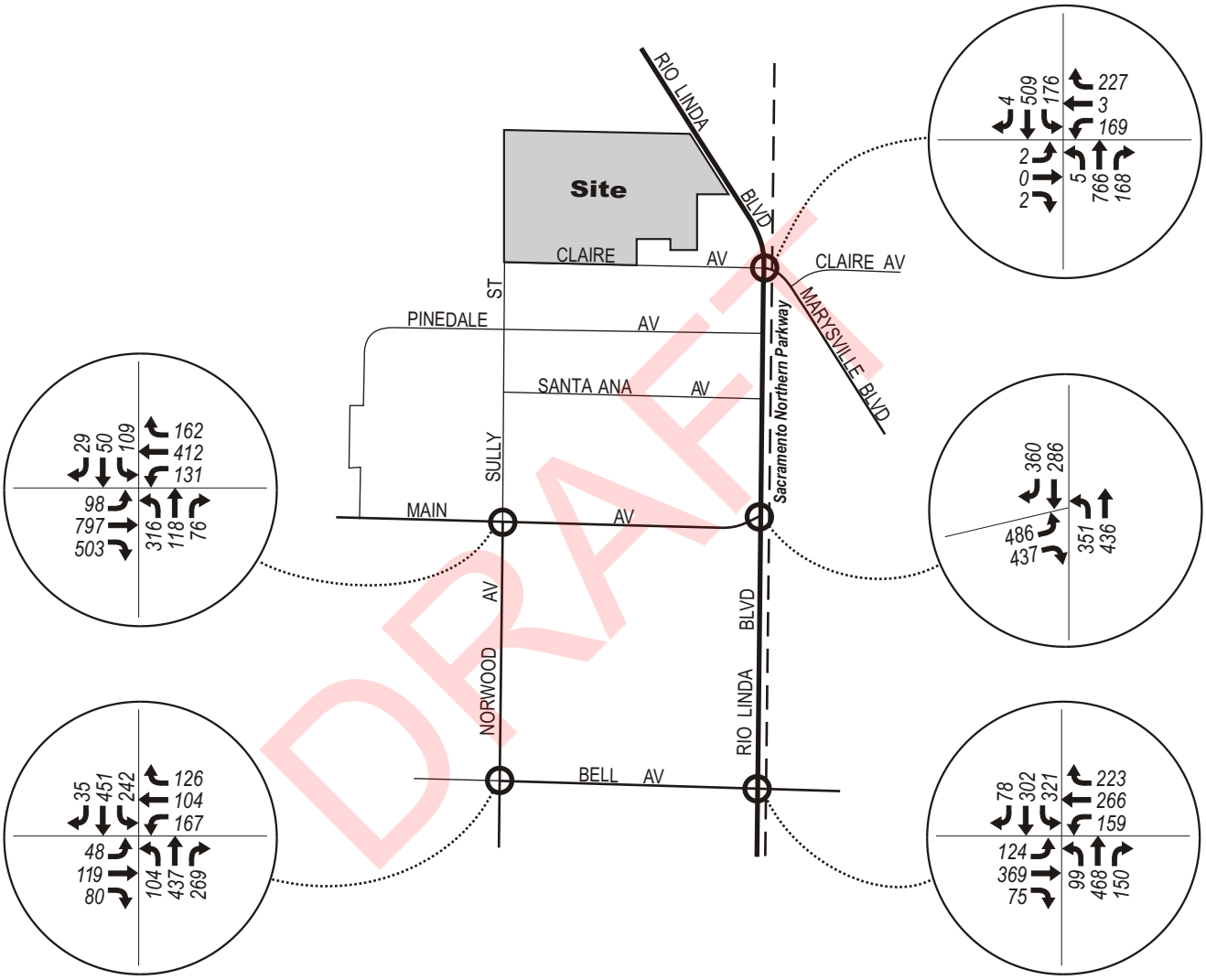
O - Study Intersection

00 - Peak Hour Traffic Volume

Figure 14
YEAR 2025 WITHOUT PROJECT
AM PEAK HOUR INTERSECTION VOLUMES

DKS *Associates*
TRANSPORTATION SOLUTIONS

NOT TO SCALE



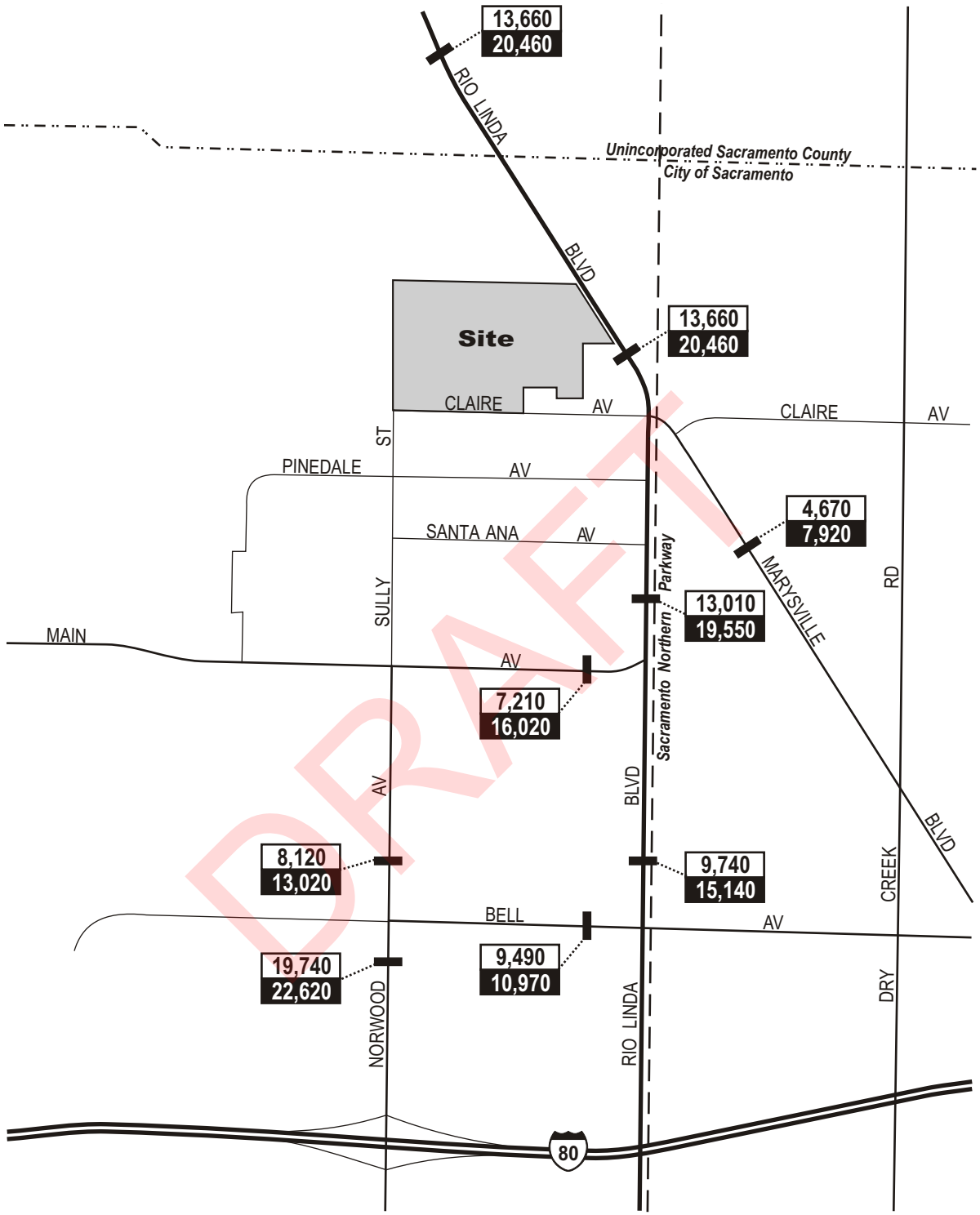
DRAFT

LEGEND

- O - Study Intersection
- ← 00 - Peak Hour Traffic Volume

Figure 15
YEAR 2025 WITHOUT PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

DKS *Associates*
TRANSPORTATION SOLUTIONS



LEGEND

- Roadway Segment
- 1,000 - 2004 Existing
- 1,000 - 2025 Without Project

Figure 16
YEAR 2025 WITHOUT PROJECT
DAILY TRAFFIC VOLUMES

TABLE 8
EXISTING AND FUTURE NO PROJECT DAILY TRAFFIC VOLUMES

		Volume	
Roadway	**Location**	**2004**	**2025**
Bell Avenue	West of Rio Linda Boulevard	9,490	10,970
Main Avenue	West of Rio Linda Boulevard	7,210	16,020
Marysville Boulevard	North of Main Avenue	4,670	7,920
Norwood Avenue	North of Bell Avenue	8,120	13,020
	South of Bell Avenue	19,740	22,620
Rio Linda Boulevard	North of Ascot Avenue	13,660	20,460
	North of Bell Avenue	9,740	15,140
	North of Claire Avenue	13,660	20,460
	North of Main Avenue	13,010	19,550

Source: *DKS Associates, 2005.*

The year 2025 forecasts assume regional changes in land use and transportation systems in accordance with the Metropolitan Transportation Plan adopted by SACOG. In the study area, the following roadway improvements are anticipated to be implemented by the year 2025:

- Widen Main Avenue from 2 lanes to 4 lanes between Norwood Avenue and Rio Linda Boulevard.
- Widen Bell Avenue from 2 lanes to 4 lanes between Norwood Avenue and Raley Boulevard.

Figure 17 illustrates year 2025 intersection geometry. It was assumed that the intersection of Main Avenue and Rio Linda Boulevard would be signalized in conjunction with the planned Main Avenue roadway widening. As noted earlier, this intersection currently warrants a traffic signal.

STANDARDS OF SIGNIFICANCE

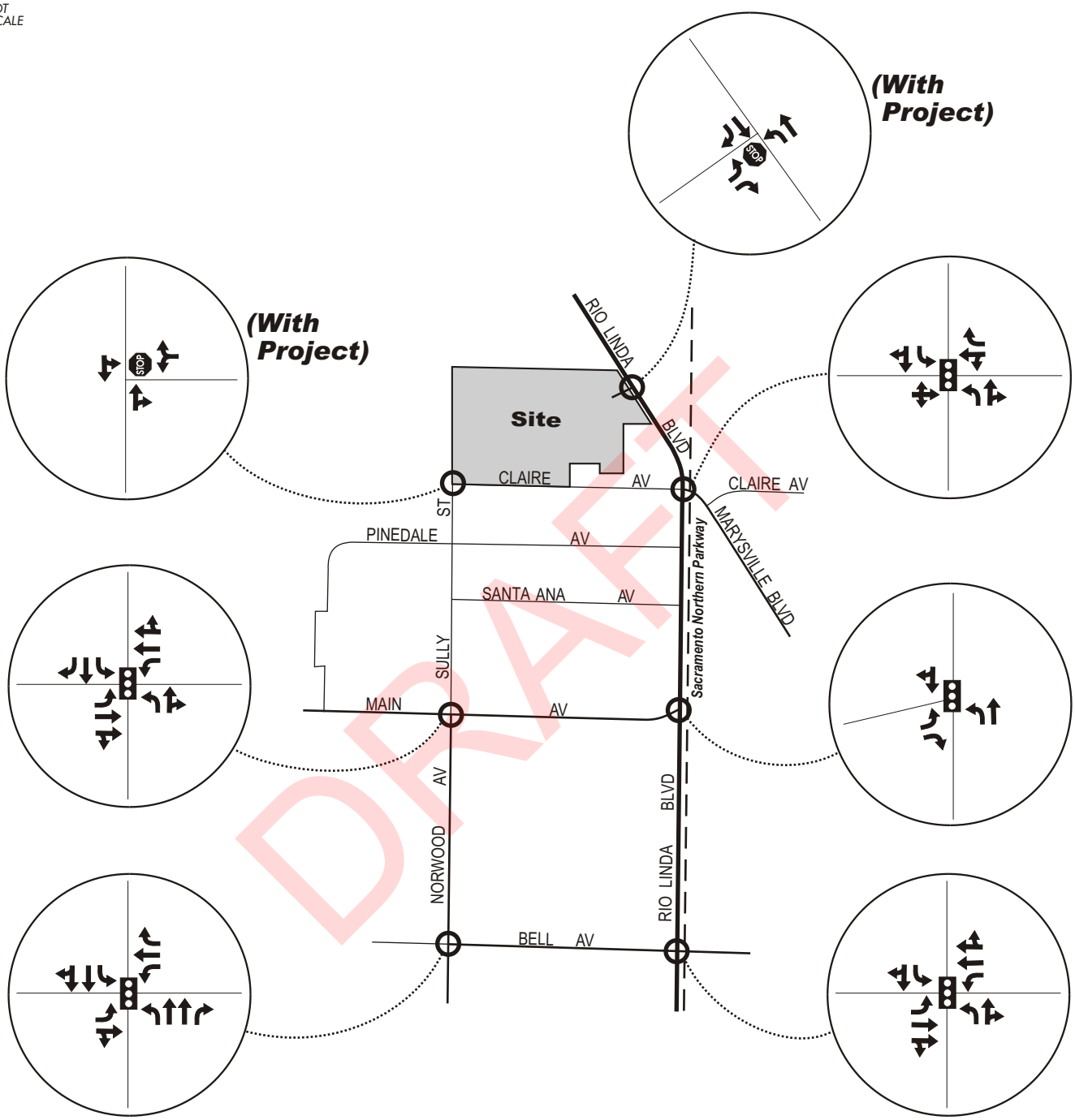
The standards of significance in this analysis are based upon the current practice of the appropriate regulatory agencies.

Intersections

In the City of Sacramento, a significant traffic impact (intersection) occurs when:

DRAFT

DKS *Associates*
TRANSPORTATION SOLUTIONS



LEGEND

- Study Intersection
- Traffic Lanes (Approach)
- Traffic Signal
- Stop Control

Figure 17
YEAR 2025
INTERSECTION GEOMETRY

1. the traffic generated by a project degrades peak period level of service from A, B, or C (without project) to D, E, or F (with project); or,

2. the LOS (without project) is D, E, or F, and project generated traffic increases the peak period average vehicle delay by five seconds or more.

Bikeways

A significant bikeway impact would occur if the project hindered or eliminated an existing designated bikeway, or if the project interfered with implementation of a proposed bikeway.

A significant bikeway impact could occur if the project were to result in unsafe conditions for bicyclists, including unsafe bicycle/pedestrian or bicycle/motor vehicle conflicts.

Pedestrian Facilities

A significant pedestrian circulation impact would occur if the project were to result in unsafe conditions for pedestrians, including unsafe increase pedestrian / bicycle or pedestrian / motor vehicle conflicts.

Transit System

A significant impact to the transit system would occur where project generated ridership, when added to existing or future ridership, exceeds available or planned system capacity. Capacity is defined as the total number of passengers the system of busses and light rail vehicles can carry during the peak hours of operation.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES (EXISTING 2004)

Impact 1 Intersections

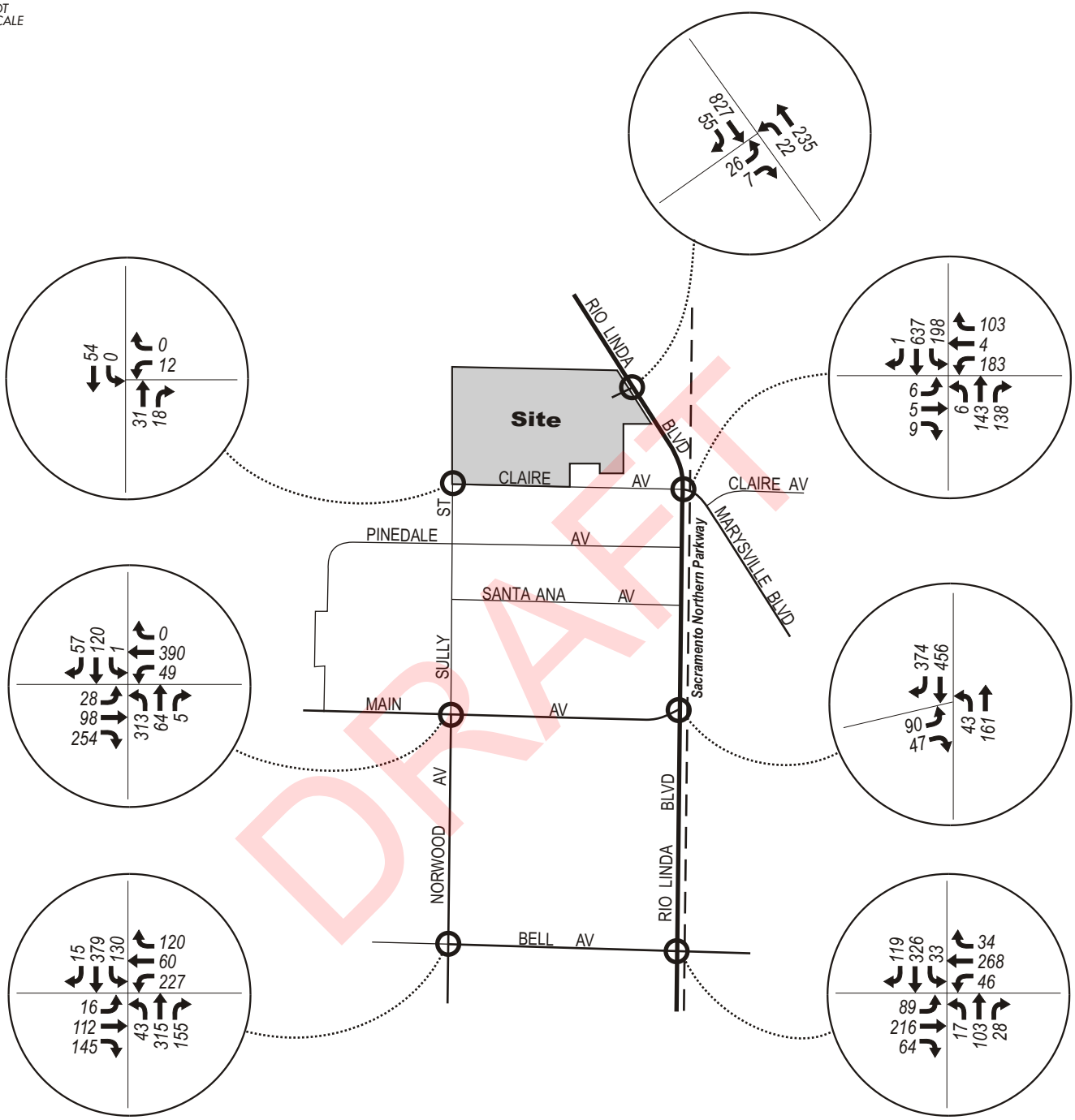
The project would increase traffic volumes at study area intersections. As discussed below, the changes in intersection operating conditions with the addition of project-generated traffic do not exceed the City's standards of significance for impacts to intersections. Therefore, the impacts of existing plus proposed project conditions at study intersections are ***less than significant.***

Discussion Figures 18 and 19 illustrate peak hour traffic volumes associated with the existing plus project scenario. Intersection operating conditions associated with the existing plus project scenario are summarized in Tables 9 and 10.

Changes in intersection operating conditions do not exceed the intersection standards of significance. The new intersections associated with the project operate at LOS "C" or better.

DRAFT

DKS *Associates*
TRANSPORTATION SOLUTIONS



LEGEND

O - Study Intersection

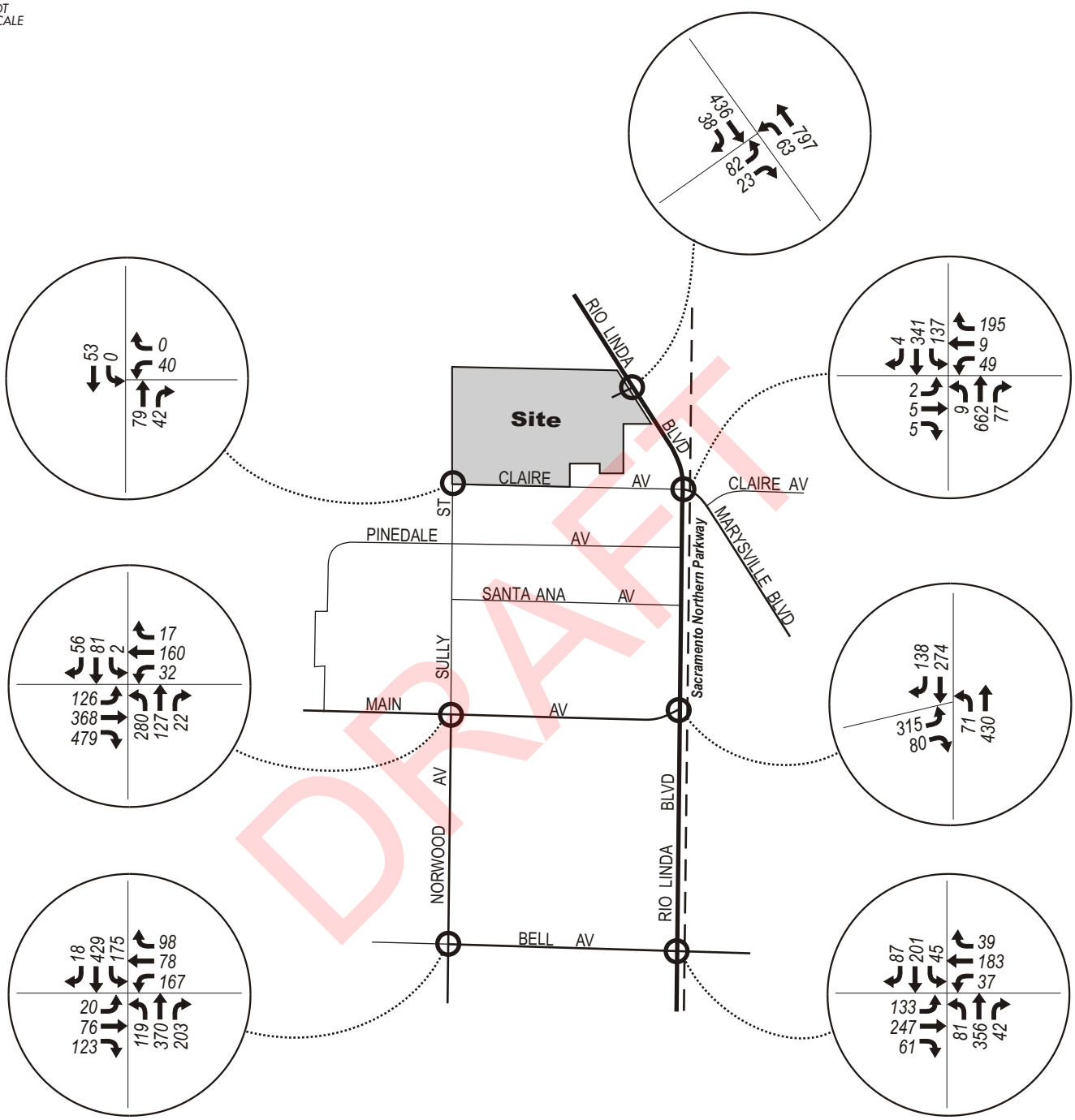
00 - Peak Hour Traffic Volume

Figure 18
EXISTING WITH PROJECT
AM PEAK HOUR INTERSECTION VOLUMES

DKS *Associates*

TRANSPORTATION SOLUTIONS

NOT TO SCALE



LEGEND

O - Study Intersection

00 - Peak Hour Traffic Volume

Figure 19
EXISTING WITH PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

DRAFT

TABLE 9
EXISTING PLUS PROJECT A.M. PEAK HOUR
INTERSECTION OPERATING CONDITIONS

Intersection	Without Project		With Project	
	LOS	Delay (Seconds)	LOS	Delay (Seconds)
Norwood Avenue and Bell Avenue (signalized)	B	19.5	B	19.7
Rio Linda Boulevard and Bell Avenue (signalized)	B	10.5	B	10.5
Norwood Ave. / Sully St. and Main Ave. (signalized)	B	17.8	B	18.8
Rio Linda Boulevard & Main Avenue (all-way stop)	E	44.4	E	38.2
Rio Linda Boulevard & Claire Avenue / Marysville Boulevard (signalized)	A	8.1	A	8.2
Sully St. / Site Roadway & Claire Ave. (unsignalized)				
- Intersection average			A	0.9
- Westbound approach			A	9.0
Rio Linda Boulevard & Site Roadway (unsignalized)				
- Intersection average			A	0.8
- Northbound left turn			A	9.8
- Eastbound left turn			C	22.6
- Eastbound right turn			B	14.8

Source: DKS Associates, 2005.

DRAFT

For informational purposes only, Figure 20 and Table 11 show existing plus project daily traffic volumes. Figure 12 illustrates the assignment of project traffic on the roadway network.

Mitigation Measures

None required.

Signal Warrant Analysis

Traffic signal warrant analysis was conducted at the three unsignalized study area intersections. Utilizing the peak hour warrant, the intersection of Rio Linda Boulevard and Main Avenue warrants a traffic signal under existing without and with project conditions in both a.m. and p.m. peak hour analysis periods. The intersection of Rio Linda Boulevard and the Site Roadway also warrants a

traffic signal under existing with project conditions in the p.m. peak hour. The intersection of Sully Street / Site Roadway and Claire Avenue does not warrant a traffic signal under existing with project conditions.

TABLE 10
EXISTING PLUS PROJECT P.M. PEAK HOUR
INTERSECTION OPERATING CONDITIONS

Intersection	Without Project		With Project	
	LOS	Delay (Seconds)	LOS	Delay (Seconds)
Norwood Avenue and Bell Avenue (signalized)	B	18.5	B	19.0
Rio Linda Boulevard and Bell Avenue (signalized)	B	10.2	B	10.3
Norwood Ave. / Sully St. and Main Ave. (signalized)	B	14.0	B	15.1
Rio Linda Boulevard & Main Avenue (all-way stop)	C	22.2	C	24.1
Rio Linda Boulevard & Claire Avenue / Marysville Boulevard (signalized)	A	7.2	A	7.9
Sully St. / Site Roadway & Claire Ave. (unsignalized)				
- Intersection average			A	1.8
- Westbound approach			A	9.5
Rio Linda Boulevard & Site Roadway (unsignalized)				
- Intersection average			A	3.4
- Northbound left turn			A	8.5
- Eastbound left turn			E	50.0
- Eastbound right turn			B	11.0

Source: DKS Associates, 2005.

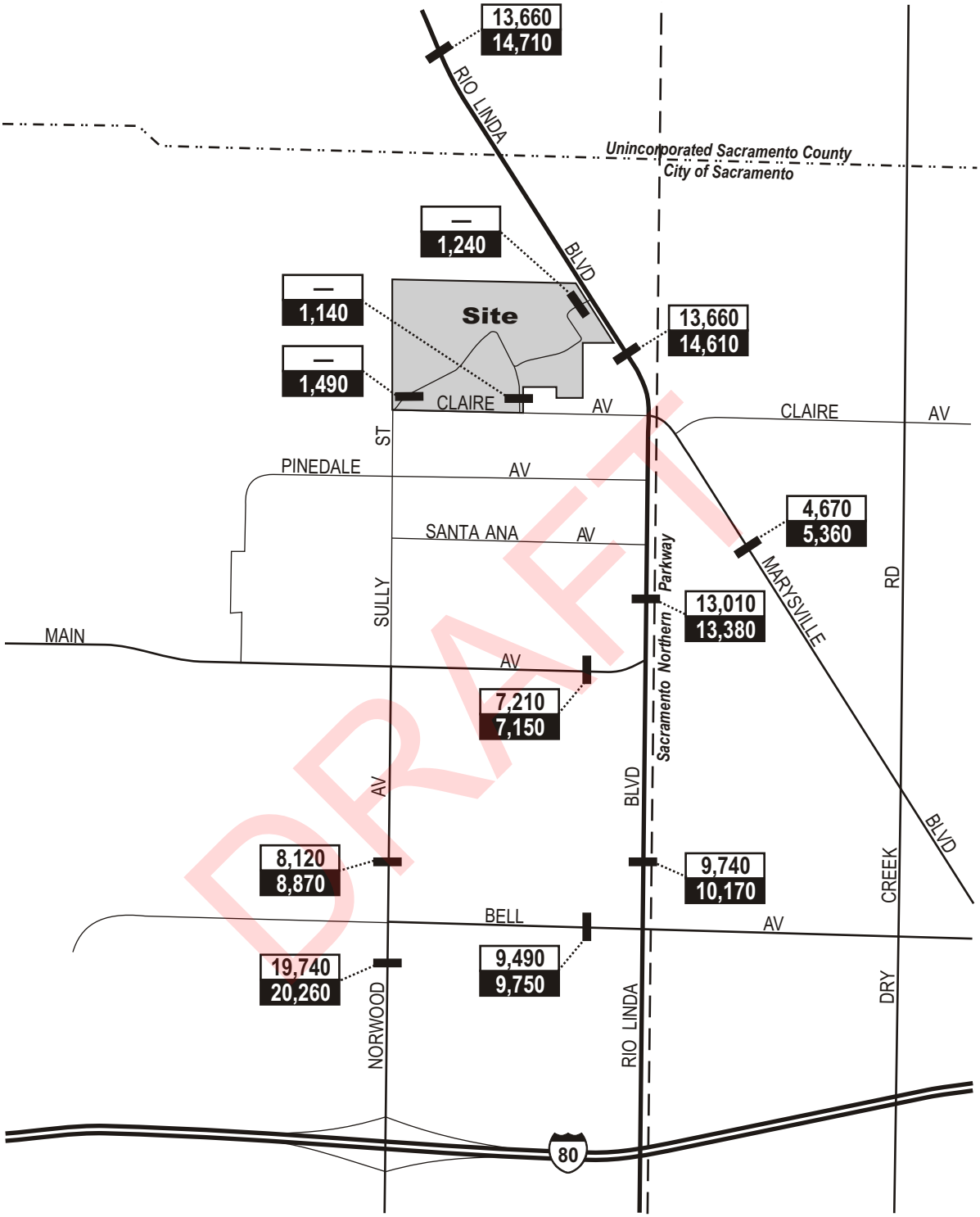
Impact 2 Bikeways

The proposed project would result in the addition of employees, residents, patrons, and visitors to the site, some of whom would travel by bicycle. The proposed project would not result in any changes to the existing or future bikeway system. Bicycle impacts are considered ***less than significant.***

Discussion The proposed project is not anticipated to hinder or eliminate an existing designated bikeway, or interfere with implementation of a proposed bikeway. The project is not anticipated to result in unsafe conditions for bicyclists, including unsafe bicycle / pedestrian or bicycle / motor vehicle conflicts.

DRAFT

DKS *Associates*
TRANSPORTATION SOLUTIONS



DRAFT

LEGEND

- Roadway Segment
- 1,000 - 2004 Existing
- 1,000 - 2004 Existing With Project

Figure 20
EXISTING WITH PROJECT DAILY TRAFFIC VOLUMES

TABLE 11 YEAR 2004 WITHOUT AND WITH PROJECT DAILY TRAFFIC VOLUMES			
		Volume	
Roadway	**Location**	**Without Project**	**With Project**
Bell Avenue	West of Rio Linda Boulevard	9,490	9,750
Main Avenue	West of Rio Linda Boulevard	7,210	7,150
Marysville Boulevard	North of Main Avenue	4,670	5,360
Norwood Avenue	North of Bell Avenue	8,120	8,870
	South of Bell Avenue	19,740	20,260
Rio Linda Boulevard	North of Ascot Avenue	13,660	14,710
	North of Bell Avenue	9,740	10,170
	North of Claire Avenue	13,660	14,610
	North of Main Avenue	13,010	13,380
Site Roadway	At Rio Linda Boulevard	-	1,240
	At Sully Street	-	1,490
	At Claire Avenue	-	1,140
Source: *DKS Associates, 2005.*			

Mitigation Measures

None required.

Impact 3 Pedestrian Facilities

The proposed project would result in the addition of employees, residents, patrons, and visitors to the site. Pedestrian impacts are considered ***less than significant.***

Discussion The project is not anticipated to result in unsafe conditions for pedestrians, including unsafe bicycle / pedestrian or pedestrian / motor vehicle conflicts.

Mitigation Measures

None required.

DRAFT

Impact 4 Transit System

The project would increase demand for transit services. As discussed below, the impact of the proposed project on the transit system is ***less than significant.***

Discussion The proposed project would result in the addition of employees, residents, patrons, and visitors to the site, some of whom would travel by transit. Although particular transit vehicles operate at or near capacity during the peak commuter periods, a review of existing transit operations and plans for future transit services indicate that there is ample capacity on the Regional Transit system to support the anticipated increase in trips. Because the existing and future transit system capacity is sufficient to accommodate the increased project generated transit ridership, the impact of the proposed project is considered *less than significant.*

Mitigation Measures

None required.

FUTURE IMPACTS AND MITIGATION MEASURES (YEAR 2025)

The analysis of transportation and circulation impacts under future conditions focuses on year 2025 conditions.

Impact 5 Intersections - Future

The project would increase traffic volumes at study area intersections. As discussed below, the changes in intersection operating conditions with the addition of project-generated traffic do not exceed the City's standards of significance for impacts to intersections. Therefore, the impacts of future plus proposed project conditions at study intersections are ***less than significant.***

Discussion Figures 21 and 22 illustrate future plus project peak hour volumes. Intersection operating conditions associated with the future plus project scenario are summarized in Tables 12 and 13.

Changes in intersection operating conditions with the proposed project do not exceed the City's intersection standards of significance. As shown in Tables 12 and 13, all of the study area intersections including the new intersections associated with the project operate at LOS "C" or better.

For informational purposes only, Figure 23 and Table 14 show future plus project daily traffic volumes. Figure 13 illustrates the assignment of project traffic on the roadway network.

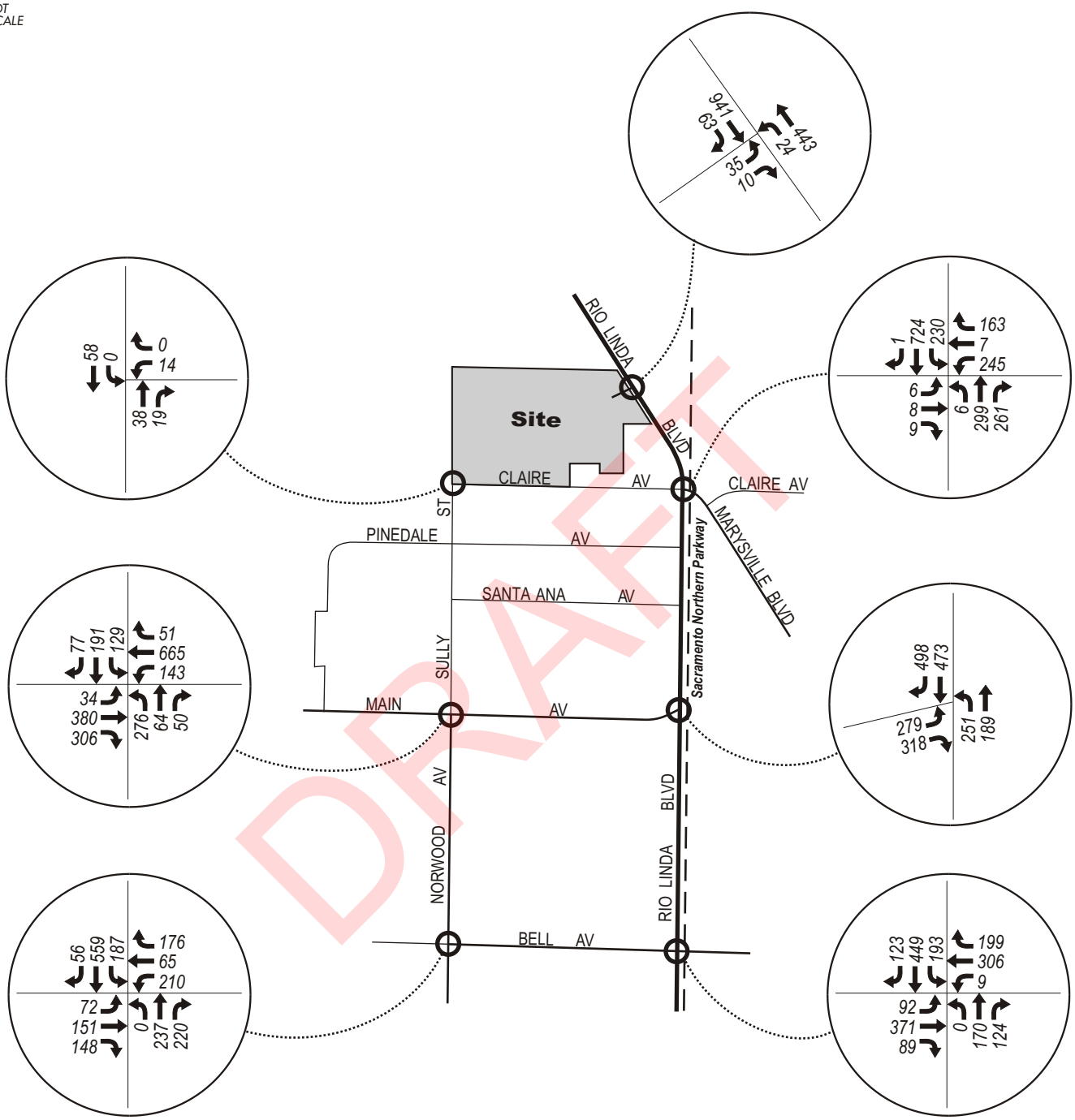
Mitigation Measures

None required.

DRAFT

DKS *Associates*
TRANSPORTATION SOLUTIONS

NOT TO SCALE



DRAFT

LEGEND

O - Study Intersection

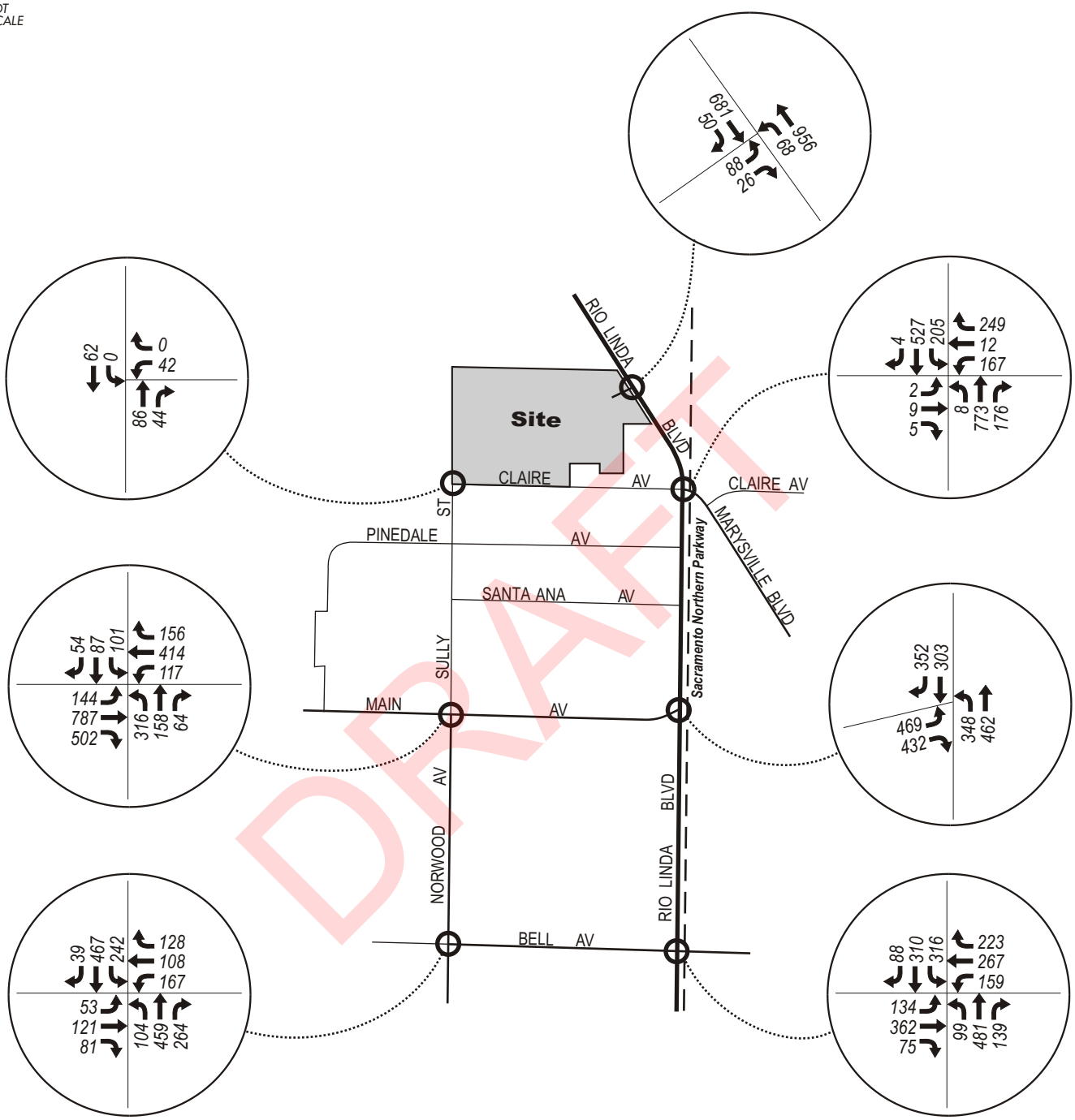
00 - Peak Hour Traffic Volume

Figure 21
YEAR 2025 WITH PROJECT
AM PEAK HOUR INTERSECTION VOLUMES

DKS *Associates*

TRANSPORTATION SOLUTIONS

NOT TO SCALE



DRAFT

LEGEND

O - Study Intersection

00 - Peak Hour Traffic Volume

Figure 22
YEAR 2025 WITH PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

TABLE 12
FUTURE PLUS PROJECT A.M. PEAK HOUR
INTERSECTION OPERATING CONDITIONS

Intersection	Without Project		With Project	
	LOS	Delay (Seconds)	LOS	Delay (Seconds)
Norwood Avenue and Bell Avenue (signalized)	C	20.3	C	20.5
Rio Linda Boulevard and Bell Avenue (signalized)	B	10.6	B	10.6
Norwood Ave. / Sully St. and Main Ave. (signalized)	C	23.0	C	23.9
Rio Linda Boulevard & Main Avenue (signalized)	C	20.1	B	18.9
Rio Linda Boulevard & Claire Avenue / Marysville Boulevard (signalized)	B	10.2	B	10.7
Sully St. / Site Roadway & Claire Ave. (unsignalized)				
- Intersection average			A	1.0
- Westbound approach			B	9.1
Rio Linda Boulevard & Site Roadway (unsignalized)				
- Intersection average			A	1.1
- Northbound left turn			B	10.3
- Eastbound left turn			E	37.4
- Eastbound right turn			C	16.5

Source: DKS Associates, 2005.

DRAFT

Signal Warrant Analysis

Traffic signal warrant analysis was conducted at the two unsignalized study area site intersections. The intersection of Rio Linda Boulevard and the Site Roadway warrants a traffic signal under future plus project conditions in the p.m. peak hour. The intersection of Sully Street / Site Roadway and Claire Avenue does not warrant a traffic signal under future plus project conditions.

Impact 6 Bikeways

The proposed project would result in the addition of employees, residents, patrons, and visitors to the site, some of whom would travel by bicycle. The proposed project would not result in any changes to the existing or future bikeway system. Bicycle impacts are considered ***less than significant.***

TABLE 13
FUTURE PLUS PROJECT P.M. PEAK HOUR
INTERSECTION OPERATING CONDITIONS

Intersection	Without Project		With Project	
	LOS	Delay (Seconds)	LOS	Delay (Seconds)
Norwood Avenue and Bell Avenue (signalized)	C	20.3	C	20.4
Rio Linda Boulevard and Bell Avenue (signalized)	B	17.0	B	16.8
Norwood Ave. / Sully St. and Main Ave. (signalized)	C	29.3	C	30.9
Rio Linda Boulevard & Main Avenue (signalized)	B	14.8	B	14.6
Rio Linda Boulevard & Claire Avenue / Marysville Boulevard (signalized)	B	12.8	B	13.8
Sully St. / Site Roadway & Claire Ave. (unsignalized)				
- Intersection average			A	1.7
- Westbound approach			A	9.6
Rio Linda Boulevard & Site Roadway (unsignalized)				
- Intersection average			A	7.3
- Northbound left turn			A	9.4
- Eastbound left turn			F	136.1
- Eastbound right turn			B	13.4

Source: DKS Associates, 2005.

DRAFT

Discussion The proposed project is not anticipated to hinder or eliminate an existing designated bikeway, or interfere with implementation of a proposed bikeway. The project is not anticipated to result in unsafe conditions for bicyclists, including unsafe bicycle / pedestrian or bicycle / motor vehicle conflicts.

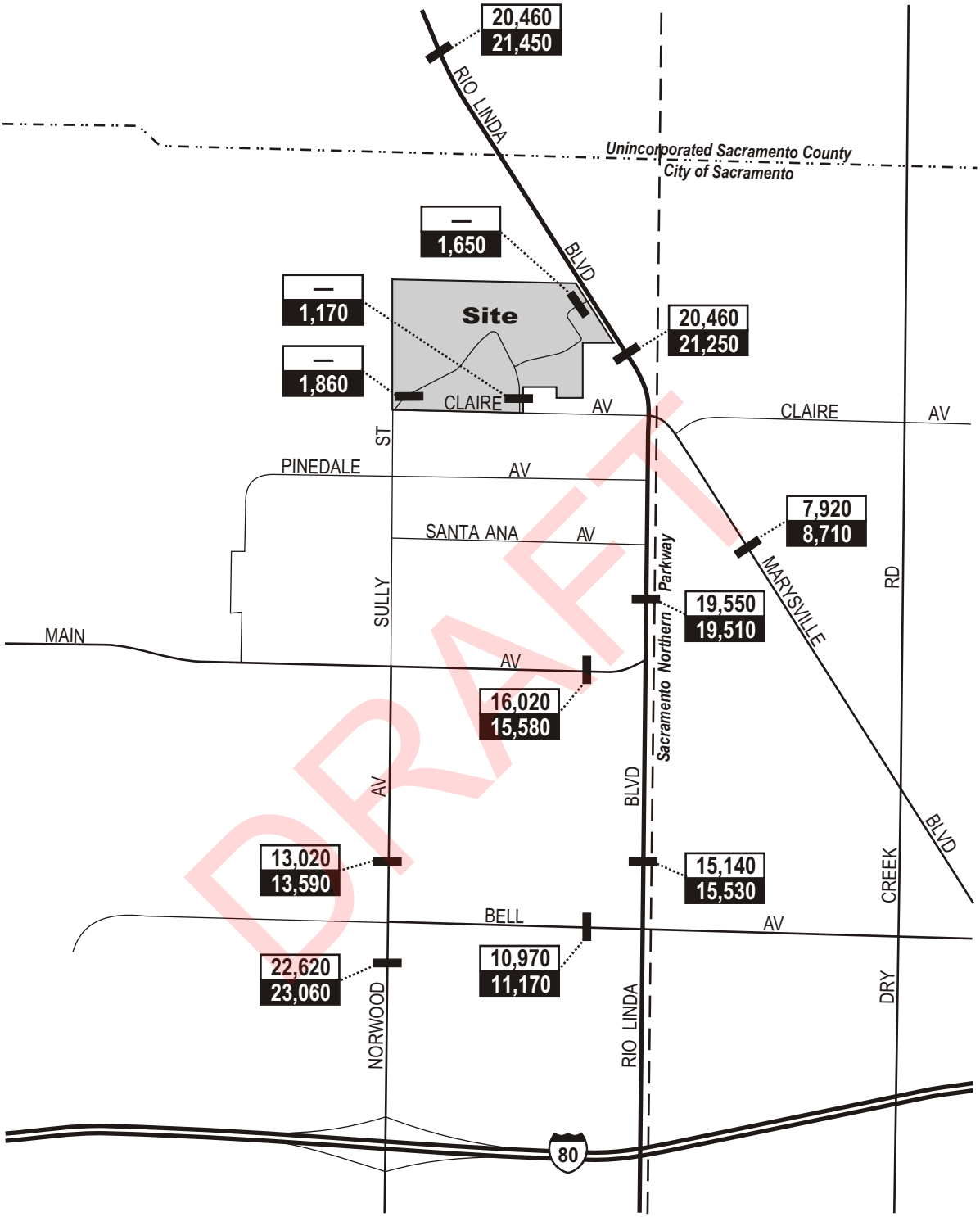
Mitigation Measures

None required.

Impact 7 Pedestrian Facilities

The proposed project would result in the addition of employees, residents, patrons, and visitors to the site. Pedestrian impacts are considered ***less than significant.***

DKS *Associates*
TRANSPORTATION SOLUTIONS



DRAFT

LEGEND

- Roadway Segment
- 1,000 - 2025 Without Project
- 1,000 - 2025 With Project

Figure 23
YEAR 2025 WITH PROJECT DAILY TRAFFIC VOLUMES

TABLE 14
YEAR 2025 WITHOUT AND WITH PROJECT DAILY TRAFFIC VOLUMES

		Volume	
Roadway	**Location**	**Without Project**	**With Project**
Bell Avenue	West of Rio Linda Boulevard	10,970	11,170
Main Avenue	West of Rio Linda Boulevard	16,020	15,580
Marysville Boulevard	North of Main Avenue	7,920	8,710
Norwood Avenue	North of Bell Avenue	13,020	13,590
	South of Bell Avenue	22,620	23,060
Rio Linda Boulevard	North of Ascot Avenue	20,460	21,450
	North of Bell Avenue	15,140	15,530
	North of Claire Avenue	20,460	21,250
	North of Main Avenue	19,550	19,510
Site Roadway	At Rio Linda Boulevard	-	1,650
	At Sully Street	-	1,860
	At Claire Avenue	-	1,170

Source: *DKS Associates, 2005.*

DRAFT

Discussion The project is not anticipated to result in unsafe conditions for pedestrians, including unsafe bicycle / pedestrian or pedestrian / motor vehicle conflicts.

Mitigation Measures

None required.

Impact 8 Transit System

The project would increase demand for transit services. As discussed below, the impact of the proposed project on the transit system is ***less than significant.***

Discussion The proposed project would result in the addition of employees, residents, patrons, and visitors to the site, some of whom would travel by transit. Although particular transit vehicles operate at or near capacity during the peak commuter periods, a review of existing transit operations and plans for future transit services indicate that there is ample capacity on the Regional Transit system to support the anticipated increase in trips. Because the existing and future transit system capacity is sufficient

to accommodate the increased project generated transit ridership, the impact of the proposed project is considered *less than significant.*

Mitigation Measures

None required.

SITE ACCESS AND VEHICULAR CIRCULATION

In addition to the analysis of project impacts in conjunction with the City's standards of significance for CEQA review, an analysis of site access and vehicular circulation was also conducted. This analysis focuses on the project's access to Rio Linda Boulevard. Currently, Rio Linda Boulevard north of Marysville Boulevard operates as a high-speed two-lane roadway with uninterrupted flow through a rural area. The project proposes site access to Rio Linda Boulevard via a site roadway, as illustrated in Figure 2. In addition, Parcel 4, located along Rio Linda Boulevard, would accommodate a proposed neighborhood shopping center.

At this time, detailed plans for the proposed shopping center are not available. This analysis anticipates that access to Rio Linda Boulevard via a separate driveway will be requested during development within the PUD. Based upon direction from City staff, this analysis assumes that a separate driveway on Rio Linda Boulevard with right-in and right-out movements only might be considered for evaluation with a future development proposal.

ACCESS RECOMMENDATIONS

Rio Linda Boulevard and Site Roadway

1. The intersection was analyzed with all movements permitted; that is, with permitted right turns and left turns both entering and exiting the site.

2. Based upon the high speed operations of Rio Linda Boulevard and the anticipated delay for the left turn movement from the Site Roadway onto northbound Rio Linda Boulevard (see Tables 10, 12, and 13), a traffic signal should be installed at this location. Based upon full development of the project (both residential and retail components), a traffic signal is warranted at this location.

   With the installation of a traffic signal, this intersection would exhibit the following operating conditions:

   - Existing Plus Project, a.m. peak hour – Level of Service "A", 6.0 seconds average delay

   - Existing Plus Project, p.m. peak hour – Level of Service "B", 18.0 seconds average delay

DRAFT

- Future Plus Project, a.m. peak hour – Level of Service "A", 7.2 seconds average delay

- Future Plus Project, p.m. peak hour – Level of Service "C", 32.0 seconds average delay

3. The site roadway eastbound approach to the intersection should consist of separate right and left turn lanes. These lanes should be a minimum of 150 feet long.

4. The site roadway westbound departure from the intersection should have one travel lane.

5. Center channelization on the site roadway is optional from a traffic operations perspective.

6. A northbound left turn lane should be constructed on Rio Linda Boulevard. The lane is necessitated by the high through volumes on Rio Linda Boulevard as well as the high-speed operations. The storage length of the left turn lane should be at least 150 feet, with appropriate lane tapers north and south of the intersection.

7. Center channelization is desirable on Rio Linda Boulevard, particularly if right-in / right-out access is provided to the retail parcel.

8. A southbound separate right turn lane on Rio Linda Boulevard should be provided to separate decelerating traffic from the high-speed Rio Linda Boulevard through traffic.

9. Sight distance at the subject intersection was reviewed by City staff. For a City standard design speed of 50 miles per hour, a clear sight distance of 427 feet is required. The nearest impediment to sight distance is a bridge over a watercourse located about 555 feet north of the proposed intersection location. This distance exceeds the required sight distance for a 55 mile per hour design speed (525 feet).

DRAFT

APPENDIX D: PROJECT SITE TRIP GENERATION WORKSHEETS

DRAFT

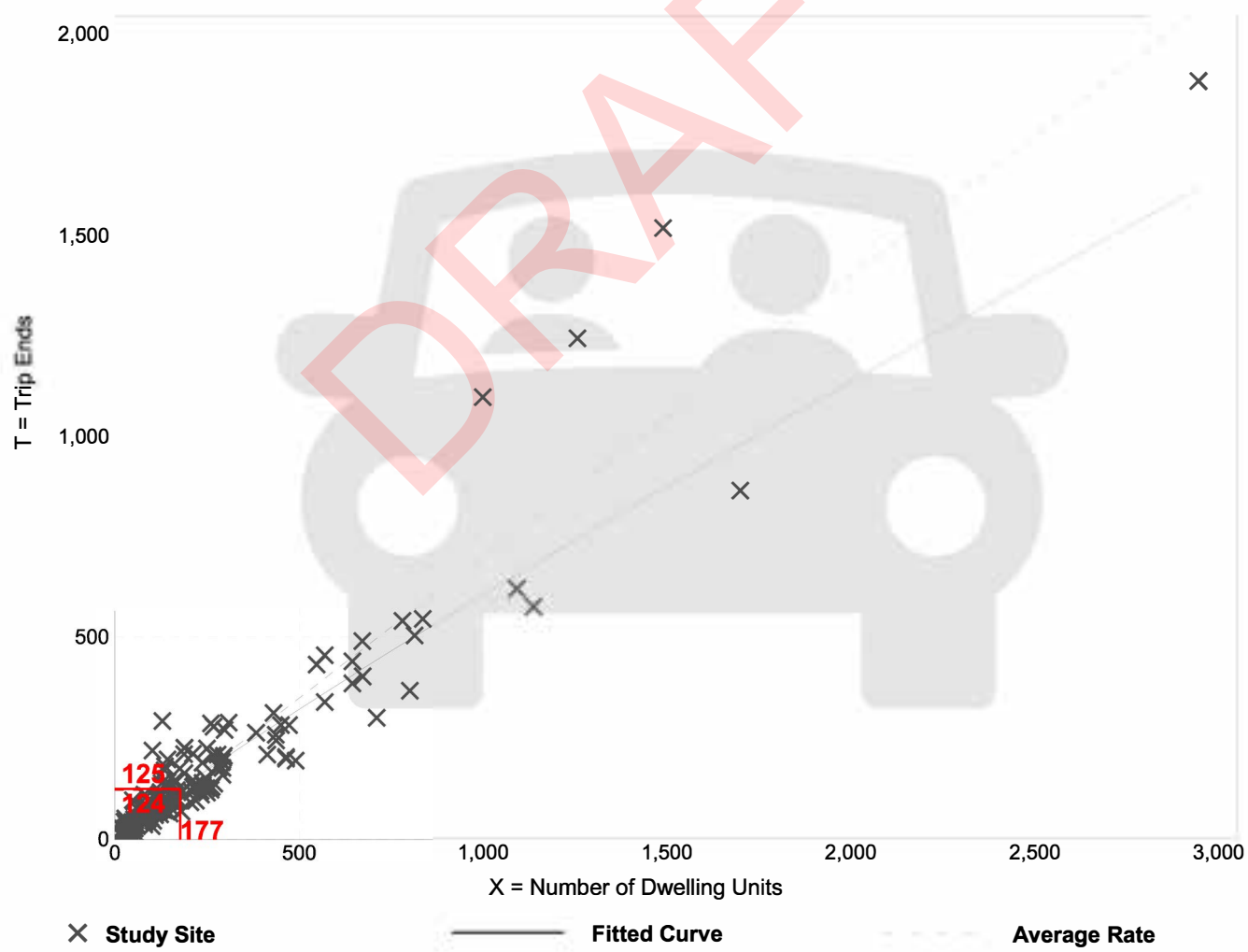
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	192
Avg. Num. of Dwelling Units:	226
Directional Distribution:	26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.91 Ln(X) + 0.12 **R^2= 0.90**

DRAFT

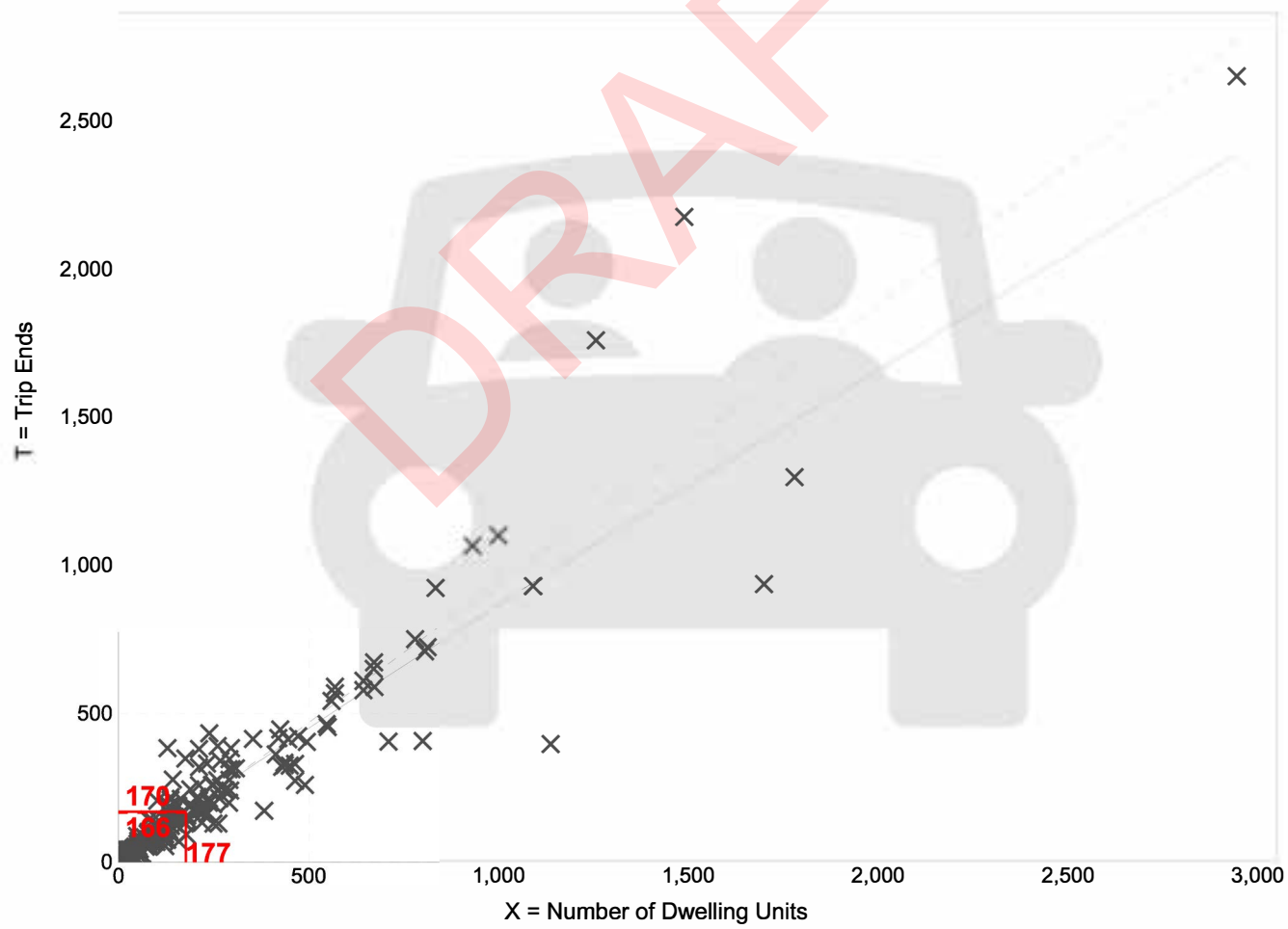
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	208
Avg. Num. of Dwelling Units:	248
Directional Distribution:	63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.94 Ln(X) + 0.27 **R^2= 0.92**

Public Park
(411)

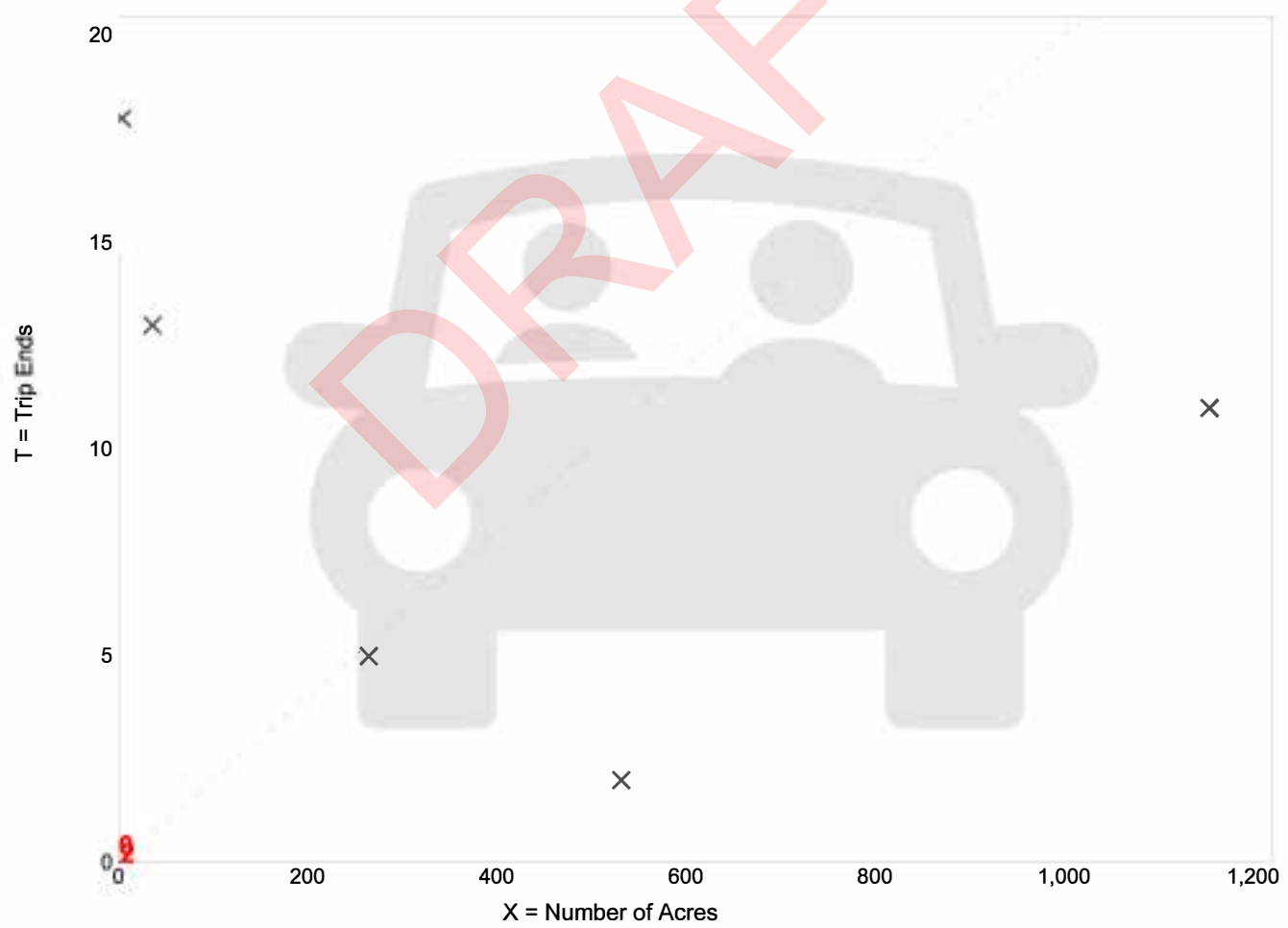
Vehicle Trip Ends vs:	**Acres**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 7 and 9 a.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	5
Avg. Num. of Acres:	398
Directional Distribution:	59% entering, 41% exiting

Vehicle Trip Generation per Acre

Average Rate	Range of Rates	Standard Deviation
0.02	0.00 - 4.50	0.23

Data Plot and Equation

Caution – Small Sample Size



Study Site **Average Rate**

Fitted Curve Equation: Not Given **R^2= ******

DRAFT

Public Park
(411)

Vehicle Trip Ends vs:	**Acres**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	6
Avg. Num. of Acres:	516
Directional Distribution:	55% entering, 45% exiting

Vehicle Trip Generation per Acre

Average Rate	Range of Rates	Standard Deviation
0.11	0.05 - 3.50	0.24

Data Plot and Equation

Fitted Curve Equation: T = 0.06(X) + 22.60

R^2= 0.53

DRAFT

APPENDIX E: CAMUTCD SIGNAL WARRANTS

DRAFT

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach

Major Street: 2 or More Lanes
Minor Street: 1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

Combination of Conditions A and B Necessary?*: Yes

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2014 MUTCD for application.*

Condition A - Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: **N/A** **Condition A Satisfied?** **N/A**

Condition B Evaluation

Number of Unique Hours Met: **N/A** **Condition B Satisfied?** **N/A**

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: **0**

Number of Unique Hours Met for Condition B: **13**

Combination of Condition A and Condition B Satisfied? **No**

DRAFT

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Total Number of Unique Hours Met On Figure 4C-2
5

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

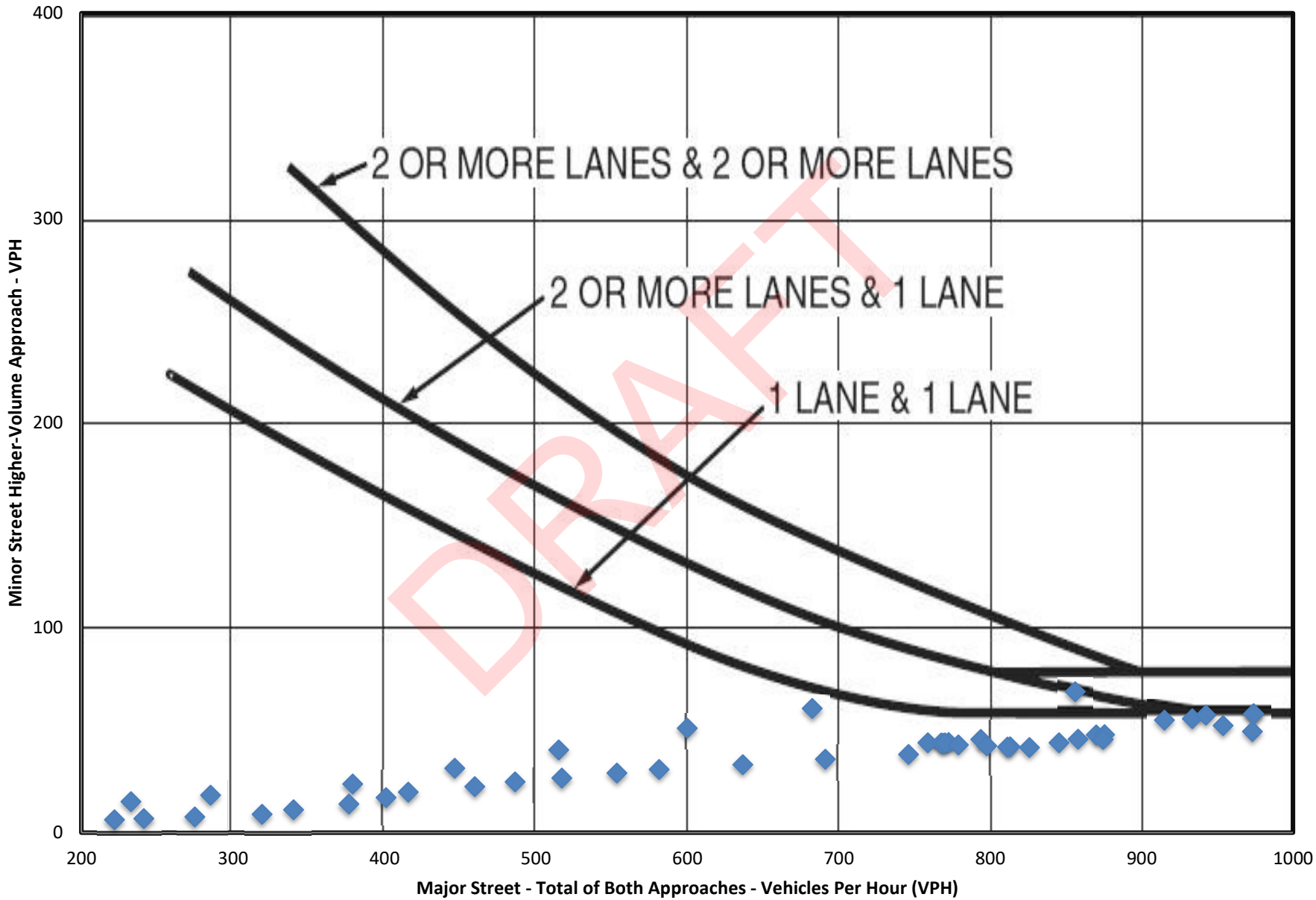
Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	99	1	
12:15 AM	88	1	
12:30 AM	80	1	
12:45 AM	71	1	
1:00 AM	66	1	
1:15 AM	63	1	
1:30 AM	57	1	
1:45 AM	54	1	
2:00 AM	53	1	
2:15 AM	57	1	
2:30 AM	63	1	
2:45 AM	73	2	
3:00 AM	82	3	
3:15 AM	88	4	
3:30 AM	94	6	
3:45 AM	113	8	
4:00 AM	139	10	
4:15 AM	182	12	
4:30 AM	233	15	
4:45 AM	285	18	
5:00 AM	379	24	
5:15 AM	447	31	
5:30 AM	515	40	
5:45 AM	600	51	
6:00 AM	683	61	
6:15 AM	856	69	
6:30 AM	1061	76	Met
6:45 AM	1200	80	Met
7:00 AM	1289	81	Met
7:15 AM	1269	78	Met
7:30 AM	1208	72	Met
7:45 AM	1153	64	Met
8:00 AM	1049	58	
8:15 AM	954	52	
8:30 AM	870	48	
8:45 AM	794	45	
9:00 AM	773	44	
9:15 AM	769	44	
9:30 AM	759	44	
9:45 AM	768	44	
10:00 AM	770	44	
10:15 AM	779	43	
10:30 AM	798	42	
10:45 AM	813	42	
11:00 AM	826	42	
11:15 AM	846	44	
11:30 AM	858	46	
11:45 AM	876	48	

DRAFT

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 PM	915	55	
12:15 PM	934	56	
12:30 PM	943	57	
12:45 PM	974	58	
1:00 PM	974	58	
1:15 PM	1006	58	
1:30 PM	1062	57	
1:45 PM	1118	57	
2:00 PM	1214	57	
2:15 PM	1261	57	
2:30 PM	1293	58	
2:45 PM	1328	60	Met
3:00 PM	1349	63	Met
3:15 PM	1370	65	Met
3:30 PM	1392	68	Met
3:45 PM	1385	69	Met
4:00 PM	1365	70	Met
4:15 PM	1363	69	Met
4:30 PM	1387	68	Met
4:45 PM	1374	68	Met
5:00 PM	1337	67	Met
5:15 PM	1294	63	Met
5:30 PM	1178	60	
5:45 PM	1073	55	
6:00 PM	973	49	
6:15 PM	875	45	
6:30 PM	812	42	
6:45 PM	746	38	
7:00 PM	691	36	
7:15 PM	637	33	
7:30 PM	582	31	
7:45 PM	554	29	
8:00 PM	517	27	
8:15 PM	486	25	
8:30 PM	460	22	
8:45 PM	416	20	
9:00 PM	401	17	
9:15 PM	377	14	
9:30 PM	340	11	
9:45 PM	319	9	
10:00 PM	275	8	
10:15 PM	241	7	
10:30 PM	222	6	
10:45 PM	190	6	
11:00 PM	176	4	

DRAFT

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



DRAFT

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No

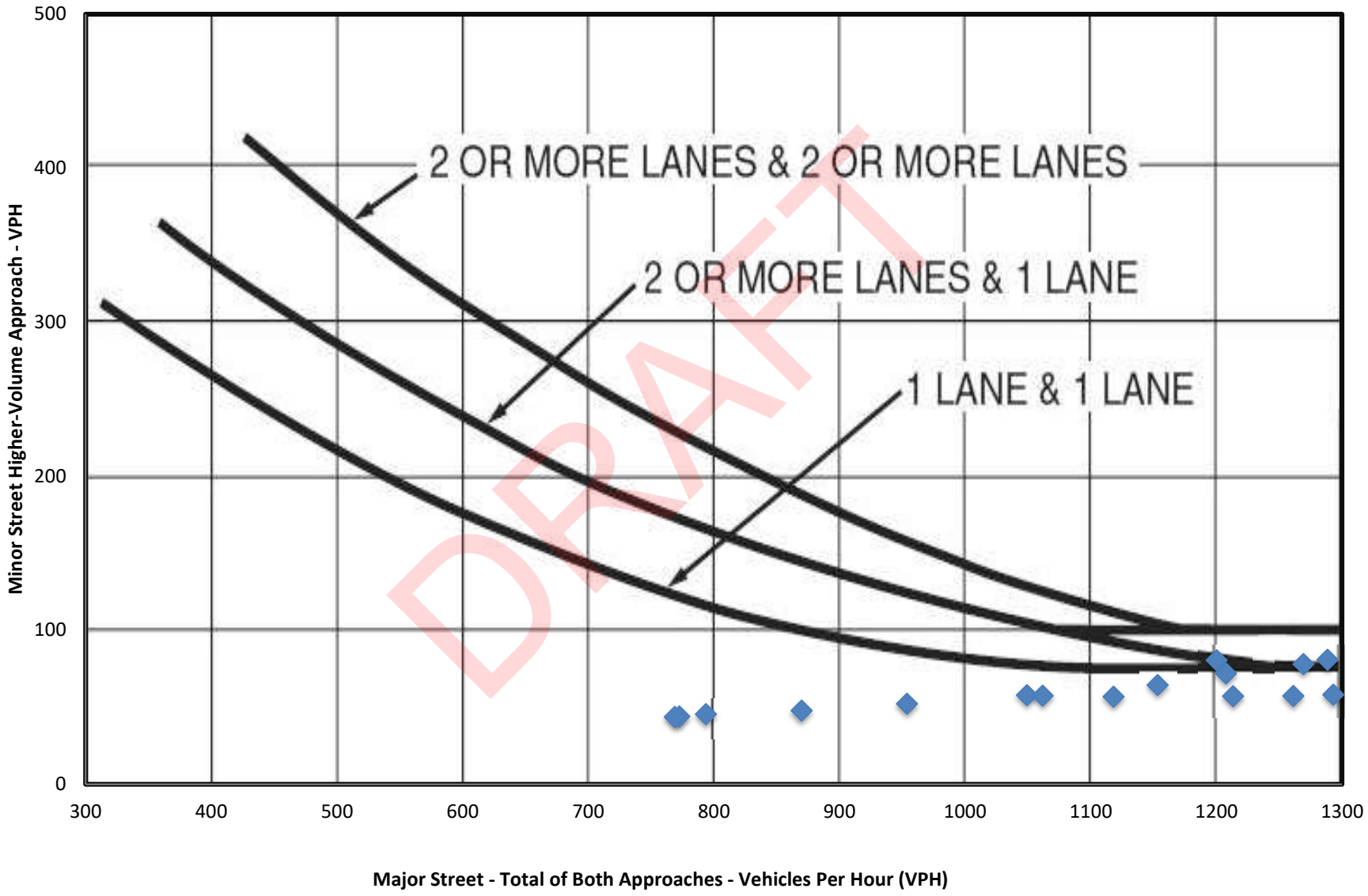
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	Yes
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes
**If applicable, attach all supporting calculations and documentation.*	

Total Number of Unique Hours Met On Figure 4C-4
1

Hourly Vehicular Volume			
Hour Interval Beginning At	**Major Street Combined Vehicles Per Hour (VPH)**	**Highest Minor Street Approach Vehicles Per Hour (VPH)**	**Hour Met?**
6:45 AM	1200	80	Met
7:00 AM	1289	81	Met
7:15 AM	1269	78	Met
7:30 AM	1208	72	
7:45 AM	1153	64	
8:00 AM	1049	58	
8:15 AM	954	52	
8:30 AM	870	48	
8:45 AM	794	45	
9:00 AM	773	44	
9:15 AM	769	44	
1:30 PM	1062	57	
1:45 PM	1118	57	
2:00 PM	1214	57	
2:15 PM	1261	57	
2:30 PM	1293	58	
2:45 PM	1328	60	
3:00 PM	1349	63	
3:15 PM	1370	65	
3:30 PM	1392	68	
3:45 PM	1385	69	
4:00 PM	1365	70	

DRAFT

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



APPENDIX F: SYNCHRO & SIDRA REPORTS

DRAFT

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	69	9	681	19	8	416
Future Vol, veh/h	69	9	681	19	8	416
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	91	92	92	80
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	75	10	748	21	9	520

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1286	374	0	0	769	0
Stage 1	748	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Critical Hdwy	6.6	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	171	629	-	-	854	-
Stage 1	434	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	169	629	-	-	854	-
Mov Cap-2 Maneuver	169	-	-	-	-	-
Stage 1	434	-	-	-	-	-
Stage 2	583	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.9	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	185	854	-
HCM Lane V/C Ratio	-	-	0.458	0.01	-
HCM Control Delay (s)	-	-	39.9	9.3	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	2.2	0	-

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱		↑
Traffic Vol, veh/h	0	14	685	5	0	424
Future Vol, veh/h	0	14	685	5	0	424
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	91	92	92	80
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	15	753	5	0	530

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	377	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	626	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	626	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	626	-
HCM Lane V/C Ratio	-	-	0.024	-
HCM Control Delay (s)	-	-	10.9	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

DRAFT

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	7	465	72	30	728
Future Vol, veh/h	55	7	465	72	30	728
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	89
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	60	8	505	78	33	818

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1389	253	0	0	583	0
Stage 1	505	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Critical Hdwy	6.6	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	147	753	-	-	1001	-
Stage 1	577	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	142	753	-	-	1001	-
Mov Cap-2 Maneuver	142	-	-	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	394	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	44.6	0	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	156	1001	-
HCM Lane V/C Ratio	-	-	0.432	0.033	-
HCM Control Delay (s)	-	-	44.6	8.7	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	1.9	0.1	-

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	11	454	18	0	758
Future Vol, veh/h	0	11	454	18	0	758
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	89
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	12	493	20	0	852

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	247	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	759	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	759	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	759	-
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	9.8	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

DRAFT

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	69	9	681	19	8	416
Future Volume (veh/h)	69	9	681	19	8	416
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1870
Adj Flow Rate, veh/h	75	10	748	21	9	520
Peak Hour Factor	0.92	0.92	0.91	0.92	0.92	0.80
Percent Heavy Veh, %	0	0	2	0	0	2
Cap, veh/h	128	17	2210	1001	584	1163
Arrive On Green	0.08	0.08	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1557	208	3647	1610	711	1870
Grp Volume(v), veh/h	86	0	748	21	9	520
Grp Sat Flow(s),veh/h/ln	1785	0	1777	1610	711	1870
Q Serve(g_s), s	1.6	0.0	3.4	0.2	0.2	4.9
Cycle Q Clear(g_c), s	1.6	0.0	3.4	0.2	3.6	4.9
Prop In Lane	0.87	0.12		1.00	1.00	
Lane Grp Cap(c), veh/h	146	0	2210	1001	584	1163
V/C Ratio(X)	0.59	0.00	0.34	0.02	0.02	0.45
Avail Cap(c_a), veh/h	1269	0	2210	1001	584	1163
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	3.1	2.4	3.9	3.3
Incr Delay (d2), s/veh	3.7	0.0	0.4	0.0	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.1	0.0	0.0	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.7	0.0	3.5	2.5	4.0	4.6
LnGrp LOS	B	A	A	A	A	A
Approach Vol, veh/h	86		769			529
Approach Delay, s/veh	18.7		3.4			4.6
Approach LOS	B		A			A

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		26.0				26.0	7.8
Change Period (Y+Rc), s		5.0				5.0	5.0
Max Green Setting (Gmax), s		21.0				21.0	24.0
Max Q Clear Time (g_c+I1), s		5.4				6.9	3.6
Green Ext Time (p_c), s		4.2				2.6	0.2

Intersection Summary	
HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱		↑
Traffic Vol, veh/h	0	14	685	5	0	424
Future Vol, veh/h	0	14	685	5	0	424
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	91	92	92	80
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	15	753	5	0	530

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	377	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	626	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	626	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	626	-
HCM Lane V/C Ratio	-	-	0.024	-
HCM Control Delay (s)	-	-	10.9	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

DRAFT

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	7	465	72	30	728
Future Volume (veh/h)	55	7	465	72	30	728
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1870
Adj Flow Rate, veh/h	60	8	505	78	33	818
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.89
Percent Heavy Veh, %	0	0	2	0	0	2
Cap, veh/h	101	13	2513	1139	721	1322
Arrive On Green	0.06	0.06	0.71	0.71	0.71	0.71
Sat Flow, veh/h	1552	207	3647	1610	845	1870
Grp Volume(v), veh/h	69	0	505	78	33	818
Grp Sat Flow(s),veh/h/ln	1785	0	1777	1610	845	1870
Q Serve(g_s), s	1.6	0.0	2.1	0.7	0.6	10.0
Cycle Q Clear(g_c), s	1.6	0.0	2.1	0.7	2.7	10.0
Prop In Lane	0.87	0.12		1.00	1.00	
Lane Grp Cap(c), veh/h	116	0	2513	1139	721	1322
V/C Ratio(X)	0.60	0.00	0.20	0.07	0.05	0.62
Avail Cap(c_a), veh/h	977	0	2513	1139	721	1322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	0.0	2.2	2.0	2.7	3.3
Incr Delay (d2), s/veh	4.8	0.0	0.2	0.1	0.1	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.1	0.0	0.0	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.8	0.0	2.4	2.1	2.8	5.5
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	69		583			851
Approach Delay, s/veh	24.8		2.3			5.4
Approach LOS	C		A			A

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		36.0				36.0	7.8
Change Period (Y+Rc), s		5.0				5.0	5.0
Max Green Setting (Gmax), s		31.0				31.0	24.0
Max Q Clear Time (g_c+I1), s		4.1				12.0	3.6
Green Ext Time (p_c), s		3.4				5.5	0.1

Intersection Summary	
HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱		↑
Traffic Vol, veh/h	0	11	454	18	0	758
Future Vol, veh/h	0	11	454	18	0	758
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	89
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	12	493	20	0	852

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	247	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	759	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	759	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

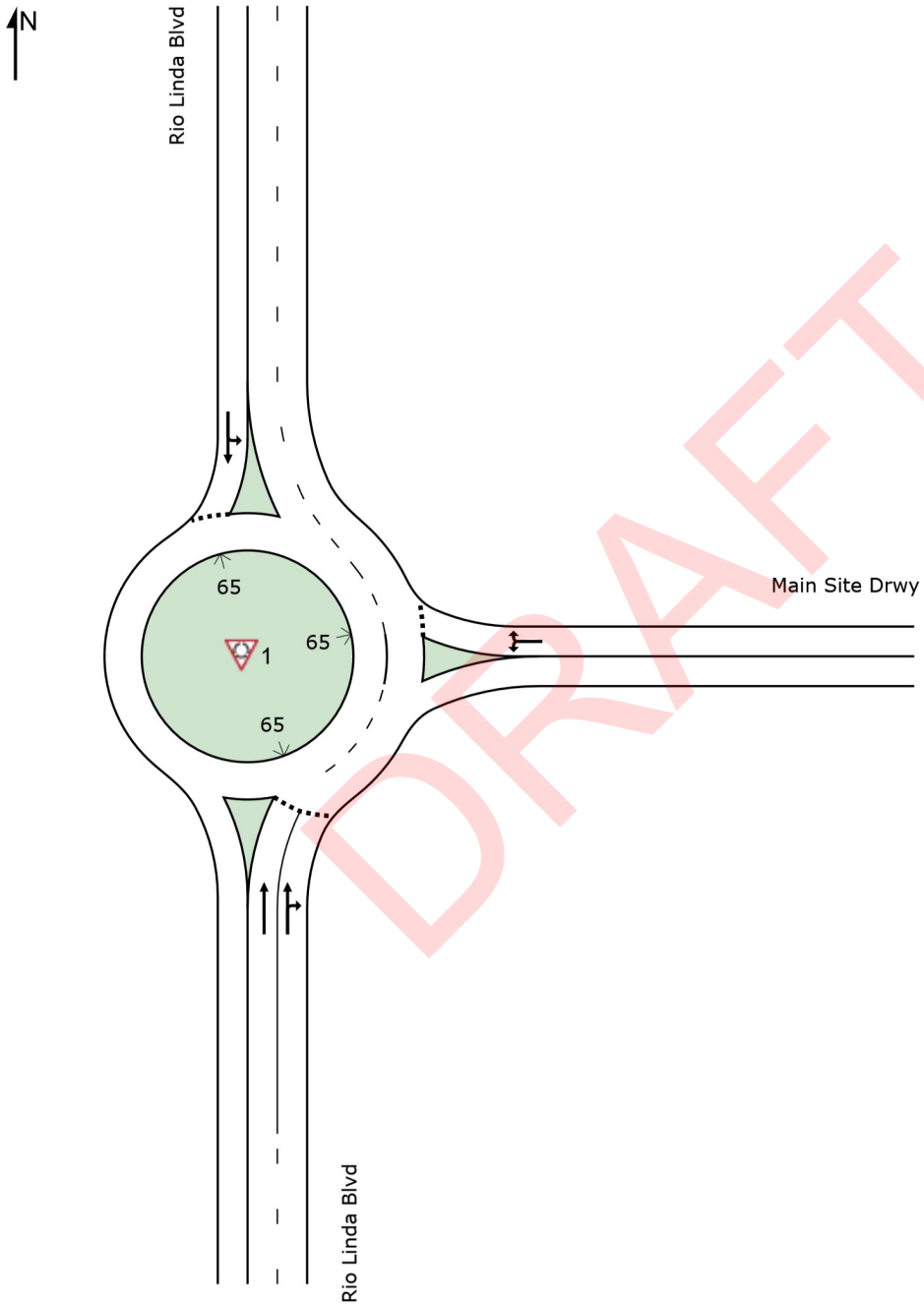
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	759	-
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	9.8	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

DRAFT

SITE LAYOUT

Site: 1 [Rio Linda Blvd & Main Site Drwy]

Existing Plus Project - AM Peak
Site Category: (None)
Roundabout



DRAFT

MOVEMENT SUMMARY

Site: 1 [Rio Linda Blvd & Main Site Drwy]

Existing Plus Project - AM Peak
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Rio Linda Blvd												
8	T1	748	2.0	0.278	5.6	LOS A	1.4	36.6	0.06	0.46	0.06	39.6
18	R2	21	0.0	0.278	5.3	LOS A	1.4	36.6	0.06	0.47	0.06	30.3
Approach		769	1.9	0.278	5.6	LOS A	1.4	36.6	0.06	0.46	0.06	39.3
East: Main Site Drwy												
1	L2	75	0.0	0.114	8.5	LOS A	0.4	10.2	0.56	0.78	0.56	28.3
16	R2	10	0.0	0.114	4.6	LOS A	0.4	10.2	0.56	0.78	0.56	27.9
Approach		85	0.0	0.114	8.0	LOS A	0.4	10.2	0.56	0.78	0.56	28.2
North: Rio Linda Blvd												
7	L2	9	0.0	0.422	10.7	LOS B	2.8	70.7	0.30	0.49	0.30	30.9
4	T1	520	2.0	0.422	6.1	LOS A	2.8	70.7	0.30	0.49	0.30	38.6
Approach		529	2.0	0.422	6.2	LOS A	2.8	70.7	0.30	0.49	0.30	38.5
All Vehicles		1382	1.8	0.422	6.0	LOS A	2.8	70.7	0.19	0.49	0.19	38.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

DRAFT

MOVEMENT SUMMARY

Site: 1 [Rio Linda Blvd & Main Site Drwy]

Existing Plus Project - PM Peak
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Rio Linda Blvd												
8	T1	505	2.0	0.215	5.7	LOS A	1.0	26.0	0.13	0.47	0.13	39.4
18	R2	78	0.0	0.215	5.4	LOS A	1.0	26.0	0.13	0.48	0.13	30.1
Approach		584	1.7	0.215	5.7	LOS A	1.0	26.0	0.13	0.47	0.13	37.8
East: Main Site Drwy												
1	L2	60	0.0	0.074	7.3	LOS A	0.3	6.6	0.47	0.67	0.47	28.6
16	R2	8	0.0	0.074	3.4	LOS A	0.3	6.6	0.47	0.67	0.47	28.2
Approach		67	0.0	0.074	6.9	LOS A	0.3	6.6	0.47	0.67	0.47	28.6
North: Rio Linda Blvd												
7	L2	33	0.0	0.668	10.9	LOS B	7.1	180.4	0.43	0.48	0.43	30.6
4	T1	818	2.0	0.668	6.2	LOS A	7.1	180.4	0.43	0.48	0.43	38.1
Approach		851	1.9	0.668	6.4	LOS A	7.1	180.4	0.43	0.48	0.43	37.7
All Vehicles		1502	1.8	0.668	6.1	LOS A	7.1	180.4	0.31	0.49	0.31	37.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

DRAFT

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	2	6	66	5	8	23	802	18	7	496	10
Future Vol, veh/h	10	2	6	66	5	8	23	802	18	7	496	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	150	200	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	91	92	92	80	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	11	2	7	72	5	9	25	881	20	8	620	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1129	1587	310	1258	1578	441	631	0	0	901	0	0
Stage 1	636	636	-	931	931	-	-	-	-	-	-	-
Stage 2	493	951	-	327	647	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	161	109	692	130	110	570	961	-	-	763	-	-
Stage 1	437	475	-	291	348	-	-	-	-	-	-	-
Stage 2	532	341	-	665	470	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	148	105	692	123	106	570	961	-	-	763	-	-
Mov Cap-2 Maneuver	148	105	-	123	106	-	-	-	-	-	-	-
Stage 1	426	470	-	283	339	-	-	-	-	-	-	-
Stage 2	502	332	-	649	465	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.2	72.7	0.2	0.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	961	-	-	189	132	763	-	-
HCM Lane V/C Ratio	0.026	-	-	0.104	0.651	0.01	-	-
HCM Control Delay (s)	8.8	-	-	26.2	72.7	9.8	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	3.5	0	-	-

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱		↑↑
Traffic Vol, veh/h	0	13	815	5	0	513
Future Vol, veh/h	0	13	815	5	0	513
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	91	92	92	80
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	14	896	5	0	641

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	448	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	564	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	564	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	564	-
HCM Lane V/C Ratio	-	-	0.025	-
HCM Control Delay (s)	-	-	11.5	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

DRAFT

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	6	24	53	4	7	66	545	69	28	874	24
Future Vol, veh/h	38	6	24	53	4	7	66	545	69	28	874	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	150	200	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	89	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	41	7	26	58	4	8	72	592	75	30	982	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1484	1853	491	1291	1804	296	1008	0	0	667	0	0
Stage 1	1042	1042	-	736	736	-	-	-	-	-	-	-
Stage 2	442	811	-	555	1068	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	88	75	529	123	80	706	695	-	-	932	-	-
Stage 1	249	309	-	381	428	-	-	-	-	-	-	-
Stage 2	570	396	-	489	301	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	75	65	529	97	69	706	695	-	-	932	-	-
Mov Cap-2 Maneuver	75	65	-	97	69	-	-	-	-	-	-	-
Stage 1	223	299	-	341	383	-	-	-	-	-	-	-
Stage 2	500	355	-	440	291	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	94.5	91.5	1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	695	-	-	106	104	932	-	-
HCM Lane V/C Ratio	0.103	-	-	0.697	0.669	0.033	-	-
HCM Control Delay (s)	10.8	-	-	94.5	91.5	9	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.6	3.4	0.1	-	-

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱		↑↑
Traffic Vol, veh/h	0	10	573	17	0	926
Future Vol, veh/h	0	10	573	17	0	926
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	89
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	11	623	18	0	1040

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	312	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	690	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	690	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	690	-
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	10.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

DRAFT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2	6	66	5	8	23	802	18	7	496	10
Future Volume (veh/h)	10	2	6	66	5	8	23	802	18	7	496	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	11	2	7	72	5	9	25	881	20	8	620	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.92	0.92	0.80	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	234	32	55	311	8	15	642	2184	990	517	2184	990
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	757	349	595	1261	88	158	808	3554	1610	628	3554	1610
Grp Volume(v), veh/h	20	0	0	86	0	0	25	881	20	8	620	11
Grp Sat Flow(s),veh/h/ln	1701	0	0	1506	0	0	808	1777	1610	628	1777	1610
Q Serve(g_s), s	0.0	0.0	0.0	1.5	0.0	0.0	0.5	4.3	0.2	0.2	2.8	0.1
Cycle Q Clear(g_c), s	0.4	0.0	0.0	1.8	0.0	0.0	3.3	4.3	0.2	4.6	2.8	0.1
Prop In Lane	0.55		0.35	0.84		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	321	0	0	333	0	0	642	2184	990	517	2184	990
V/C Ratio(X)	0.06	0.00	0.00	0.26	0.00	0.00	0.04	0.40	0.02	0.02	0.28	0.01
Avail Cap(c_a), veh/h	1249	0	0	1227	0	0	642	2184	990	517	2184	990
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	14.9	0.0	0.0	3.8	3.4	2.6	4.5	3.1	2.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	0.1	0.6	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.6	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	0.0	0.0	15.3	0.0	0.0	4.0	3.9	2.6	4.6	3.4	2.6
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		20			86			926			639	
Approach Delay, s/veh		14.3			15.3			3.9			3.4	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		26.0		8.2		26.0		8.2				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		21.0		24.0		21.0		24.0				
Max Q Clear Time (g_c+I1), s		6.3		2.4		6.6		3.8				
Green Ext Time (p_c), s		5.1		0.0		3.4		0.4				

Intersection Summary			
HCM 6th Ctrl Delay			4.4
HCM 6th LOS			A

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱		↑↑
Traffic Vol, veh/h	0	13	815	5	0	513
Future Vol, veh/h	0	13	815	5	0	513
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	91	92	92	80
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	14	896	5	0	641

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	448	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	564	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	564	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	564	-
HCM Lane V/C Ratio	-	-	0.025	-
HCM Control Delay (s)	-	-	11.5	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

DRAFT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	6	24	53	4	7	66	545	69	28	874	24
Future Volume (veh/h)	38	6	24	53	4	7	66	545	69	28	874	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1870	1900	1900	1870	1900
Adj Flow Rate, veh/h	41	7	26	58	4	8	72	592	75	30	982	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	221	24	57	293	12	18	481	2310	1047	634	2310	1047
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	816	244	574	1286	121	182	582	3554	1610	782	3554	1610
Grp Volume(v), veh/h	74	0	0	70	0	0	72	592	75	30	982	26
Grp Sat Flow(s),veh/h/ln	1634	0	0	1589	0	0	582	1777	1610	782	1777	1610
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	0.0	2.7	2.8	0.7	0.7	5.3	0.2
Cycle Q Clear(g_c), s	1.5	0.0	0.0	1.4	0.0	0.0	8.1	2.8	0.7	3.5	5.3	0.2
Prop In Lane	0.55		0.35	0.83		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	0	0	323	0	0	481	2310	1047	634	2310	1047
V/C Ratio(X)	0.24	0.00	0.00	0.22	0.00	0.00	0.15	0.26	0.07	0.05	0.43	0.02
Avail Cap(c_a), veh/h	1065	0	0	1044	0	0	481	2310	1047	634	2310	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	0.0	16.8	0.0	0.0	5.3	2.9	2.6	3.7	3.4	2.5
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.3	0.0	0.0	0.7	0.3	0.1	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.5	0.0	0.0	0.2	0.2	0.1	0.1	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	0.0	0.0	17.2	0.0	0.0	6.0	3.2	2.7	3.8	4.0	2.5
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		74			70			739			1038	
Approach Delay, s/veh		17.3			17.2			3.4			3.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.0		9.0		31.0		9.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0				
Max Q Clear Time (g_c+I1), s		10.1		3.5		7.3		3.4				
Green Ext Time (p_c), s		4.1		0.3		6.5		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		4.7
HCM 6th LOS		A

DRAFT

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↱	↑↑	↱		↑↑
Traffic Vol, veh/h	0	10	573	17	0	926
Future Vol, veh/h	0	10	573	17	0	926
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	70	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	89
Heavy Vehicles, %	2	0	2	0	2	2
Mvmt Flow	0	11	623	18	0	1040

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	312	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	690	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	690	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

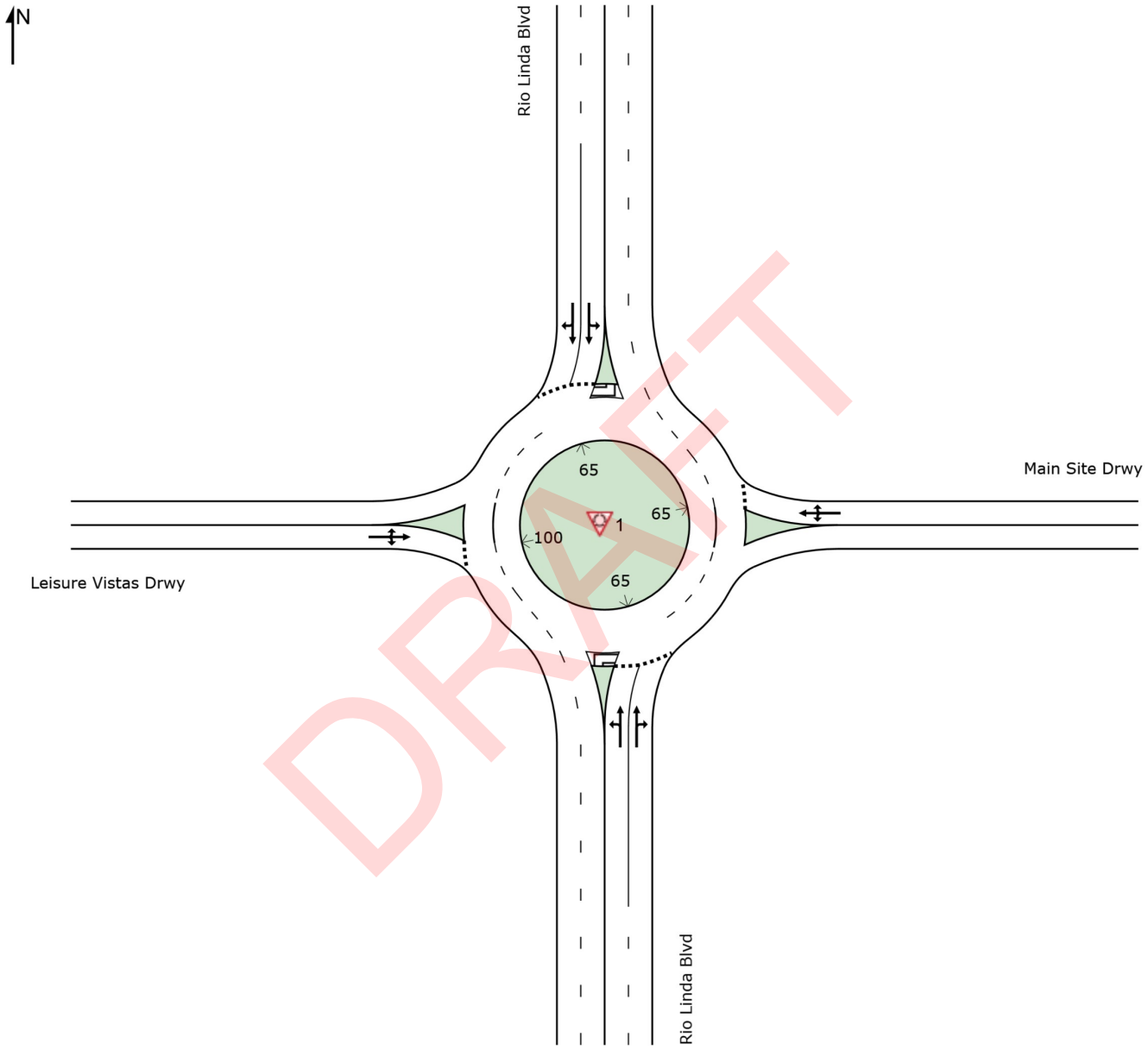
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	690	-
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	10.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

DRAFT

SITE LAYOUT

Site: 1 [Rio Linda Blvd & Main Site Drwy/Leisure Vistas Drwy]

2040 Cumulative - AM Peak
Site Category: (None)
Roundabout



DRAFT

MOVEMENT SUMMARY

Site: 1 [Rio Linda Blvd & Main Site Drwy/Leisure Vistas Drwy]

2040 Cumulative - AM Peak
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Rio Linda Blvd												
3	L2	25	0.0	0.339	9.4	LOS A	1.9	48.1	0.12	0.47	0.12	37.9
8	T1	881	2.0	0.339	5.7	LOS A	1.9	48.1	0.12	0.47	0.12	39.3
18	R2	20	0.0	0.339	5.4	LOS A	1.9	48.1	0.12	0.46	0.12	30.1
Approach		926	1.9	0.339	5.8	LOS A	1.9	48.1	0.12	0.47	0.12	39.0
East: Main Site Drwy												
1	L2	72	0.0	0.134	9.4	LOS A	0.5	11.8	0.60	0.81	0.60	28.5
6	T1	5	0.0	0.134	8.6	LOS A	0.5	11.8	0.60	0.81	0.60	27.7
16	R2	9	0.0	0.134	5.6	LOS A	0.5	11.8	0.60	0.81	0.60	27.9
Approach		86	0.0	0.134	8.9	LOS A	0.5	11.8	0.60	0.81	0.60	28.4
North: Rio Linda Blvd												
7	L2	8	0.0	0.252	10.9	LOS B	1.2	30.8	0.26	0.48	0.26	31.4
4	T1	620	2.0	0.252	5.8	LOS A	1.2	30.8	0.26	0.48	0.26	39.3
14	R2	11	0.0	0.252	5.0	LOS A	1.2	30.8	0.26	0.47	0.26	36.7
Approach		638	1.9	0.252	5.8	LOS A	1.2	30.8	0.26	0.48	0.26	39.1
West: Leisure Vistas Drwy												
5	L2	11	0.0	0.025	12.0	LOS B	0.1	2.2	0.52	0.72	0.52	34.6
2	T1	2	0.0	0.025	6.9	LOS A	0.1	2.2	0.52	0.72	0.52	34.7
12	R2	7	0.0	0.025	6.4	LOS A	0.1	2.2	0.52	0.72	0.52	34.0
Approach		20	0.0	0.025	9.6	LOS A	0.1	2.2	0.52	0.72	0.52	34.4
All Vehicles		1670	1.8	0.339	6.0	LOS A	1.9	48.1	0.20	0.49	0.20	38.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

DRAFT

MOVEMENT SUMMARY

Site: 1 [Rio Linda Blvd & Main Site Drwy/Leisure Vistas Drwy]

2040 Cumulative - PM Peak
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Rio Linda Blvd												
3	L2	72	0.0	0.284	9.7	LOS A	1.4	36.6	0.23	0.52	0.23	37.0
8	T1	592	2.0	0.284	5.9	LOS A	1.4	36.6	0.23	0.51	0.23	38.6
18	R2	75	0.0	0.284	5.6	LOS A	1.4	36.6	0.23	0.49	0.23	29.9
Approach		739	1.6	0.284	6.3	LOS A	1.4	36.6	0.23	0.51	0.23	37.3
East: Main Site Drwy												
1	L2	58	0.0	0.090	8.1	LOS A	0.3	8.0	0.54	0.74	0.54	29.0
6	T1	4	0.0	0.090	7.4	LOS A	0.3	8.0	0.54	0.74	0.54	28.1
16	R2	8	0.0	0.090	4.4	LOS A	0.3	8.0	0.54	0.74	0.54	28.4
Approach		70	0.0	0.090	7.7	LOS A	0.3	8.0	0.54	0.74	0.54	28.8
North: Rio Linda Blvd												
7	L2	30	0.0	0.421	11.2	LOS B	2.5	62.8	0.37	0.52	0.37	31.1
4	T1	982	2.0	0.421	6.0	LOS A	2.5	62.8	0.37	0.52	0.37	38.8
14	R2	26	0.0	0.421	5.3	LOS A	2.5	62.8	0.37	0.51	0.37	36.3
Approach		1039	1.9	0.421	6.2	LOS A	2.5	62.8	0.37	0.52	0.37	38.4
West: Leisure Vistas Drwy												
5	L2	41	0.0	0.131	14.3	LOS B	0.5	11.3	0.64	0.86	0.64	33.5
2	T1	7	0.0	0.131	9.2	LOS A	0.5	11.3	0.64	0.86	0.64	33.6
12	R2	26	0.0	0.131	8.7	LOS A	0.5	11.3	0.64	0.86	0.64	32.9
Approach		74	0.0	0.131	11.9	LOS B	0.5	11.3	0.64	0.86	0.64	33.3
All Vehicles		1921	1.6	0.421	6.5	LOS A	2.5	62.8	0.33	0.53	0.33	37.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

DRAFT